

**FACTORS INFLUENCING BREASTFEEDING DURATION
IN A MILITARY ENVIRONMENT**

**A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science**

By

**TAMMY REED DOYLE
B.S.N., Tennessee Technological University, 1987**

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of Science.

Susan Praeger

Susan Praeger, Ed.D.

Thesis Director

Patricia A. Martin

Patricia Martin, Ph.D

Interim Dean, College of Nursing and Health

Committee on
Final Examination

Susan Praeger

Susan Praeger, Ed.D

Jeanne Ballantine

Jeanne Ballantine, Ph.D

Raenell Poynter

Raenell Poynter, MS, RN

Joseph F. Thomas, Jr.

Joseph F. Thomas, Jr., Ph. D.

Dean, School of Graduate Studies

ABSTRACT

Doyle, Tammy Reed. M.S., Wright State University-Miami Valley College of Nursing and Health, Wright State University, 1999. Factors Influencing Breastfeeding Duration in a Military Environment.

The American Academy of Pediatrics (AAP) recommends breastfeeding for at least 12 months, and as long as mother and child mutually desire thereafter ("Breastfeeding and the Use", 1997). Benefits of breastfeeding are multifaceted and extend beyond mother and baby into society. In spite of evidence of the superiority of breastmilk, many women choose to bottle-feed or to cease breastfeeding earlier than recommended by the AAP. The national average for initiation and duration of breastfeeding to six months is well below the proposed goal set forth in Healthy People 2000. The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed in a military environment.

This comparative descriptive research was conducted at a 301 bed military facility in the Midwest using a non-probability sample (n=53) of mothers who had initiated breastfeeding and either weaned by four months or continued to breastfeed for at least six months. A demographic survey, Attitudes Toward Breastfeeding Scale, questionnaires to obtain information on "subjective norm" and "perceived behavioral control", and a question to determine breastfeeding intention were utilized for data collection. This study incorporated Ajzen's (1988) theory of planned behavior highlighting the belief that intentions, attitude, and concerns about what others think influence behavior. Descriptive statistics, correlation, multiple regression, and t-tests were used to analyze data.

The findings of this study revealed that, in general, the 53 participants had a strong intention to breastfeed (mean = 6.7, range 1-7) prior to the birth of the baby, had a

moderate perception of control (mean = 5.5, range 1-7) of breastfeeding, a positive attitude toward breastfeeding (mean = 3.8, range 1-5), and felt a medium level of pressure (subjective norm) (mean 27.5, range 1-49) to breastfeed. A positive attitude toward breastfeeding ($r=0.70$) and a higher perception of control ($r=0.52$) of breastfeeding exhibited the greatest relationship with longer duration of breastfeeding. Comparison of the two groups found those who breastfed a minimum of six months had a slightly higher positive attitude (mean = 4.0) and perceived a better control of breastfeeding (mean = 6.3) than those who weaned on or before four months (mean = 3.5 and 3.9, respectively).

Implications for practice include interventions aimed at influencing attitudes toward breastfeeding and incorporating confidence building strategies into prenatal care. Implementation of educational programs describing benefits of breastfeeding in school health programs as early as kindergarten is necessary. Attending ongoing educational offerings to stay current on breastfeeding issues and ensuring policies and support programs are in place for breastfeeding mothers are additional areas of practice concern.

The small sample size and use of a convenience sample from a single setting limits the ability to generalize the findings of this study. Another limitation was the use of questionnaires which relies on subjectivity and honesty of response. Additionally, the wide range of duration (two weeks to four months) of breastfeeding among the short-term breastfeeders versus the short range of duration (six months to seven months) among long-term breastfeeders may not have allowed for accurate examination of the variables. Finally, the internal consistency for the "subjective norm" questionnaire was below the recommended standard and attributes to the limitations of this study.

Replication of the current study using a larger sample size and other military environments are areas for future studies. Additional recommendations are studies examining relationships among demographic variables, specific types of support for breastfeeding military families, or duration of breastfeeding among active duty women. Comparing civilian and military women who breastfeed or comparing mothers who chose

to bottle-feed and those who chose to breastfeed are other recommendations. A qualitative study examining the mother's perception of the military environment's influence on her breastfeeding experience is also suggested.

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I. INTRODUCTION

As part of the nation's goal of health for all by the year 2000, a series of objectives were established and are largely contained in Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention (U.S. DHEW, 1979). Included in these objectives was a goal for breastfeeding which states that by 1990 "the proportion of women who breastfeed their babies at hospital discharge should be increased to 75%, and the percentage of those still breastfeeding at 6 months of age should be increased to 35%" (U.S. DHHS, 1980, p. 75). When the objective was not met by 1990 it was revised to state that by 2000 the proportion of women who breastfeed their babies at hospital discharge should be 75%, and the percentage of those still breastfeeding at 5 to 6 months should be 50% (U.S. DHHS, 1991). The proposed draft for the 2010 objectives has added another section to the objective which is to increase to at least 25% the proportion who breastfeed until the infant is one year old ("Healthy People 2010", 1999).

In 1984 the Surgeon General conducted a workshop on breastfeeding and human lactation. This workshop marked the first time a national leader called attention to breastfeeding (Spisak & Gross, 1991, p. iii). Participants in the workshop were directed by the Surgeon General to focus their attention on the following seven key issues:

- "the decision to breastfeed;
- sociocultural influences and determinants of infant feeding practices;
- support services needed for initiation and continuation of breastfeeding;

- roles and responsibilities of the health-care system in promoting breastfeeding;
- overcoming barriers to breastfeeding in the world of work;
- educating health professionals and the public about breastfeeding; and
- research needs in breastfeeding and human lactation" (U.S. DHHS, 1984, p. 7).

Following the two-day workshop, the working group presented recommendations to the Surgeon General in six areas. The recommendations were:

- develop promotional efforts directed to all who influence breastfeeding decisions and opportunities,
- enhance public education on breastfeeding through the education system and the media,
- improve education of health care professionals to ensure they receive both didactic and clinical training in lactation and breastfeeding,
- enhance support for breastfeeding within the health care system,
- develop broad support services for breastfeeding in the community, and
- expand research efforts on breastfeeding and human lactation (U.S. DHHS, 1984).

Follow up reports on the six recommendations were published in 1991 (Spisak & Gross, 1991). Intensive efforts have been made to address and work on the six areas but goals established for breastfeeding have not been met. In 1995, 59.4% of women in the United States were breastfeeding, exclusively or in combination with formula feeding, at time of discharge from the hospital and only 21.6% of those mothers continued to breastfeed until six months (Ryan, 1997).

Factors influencing initiation and duration rates of breastfeeding have been the focus of several studies. However, the samples were all drawn from civilian populations.

No studies were found that examined initiation and duration of breastfeeding in a military setting. The transient nature of the military could present different obstacles ranging from the lack of traditional family support to an inability to keep health care providers trained as lactation educators at a given facility. Justification for this study rests in the potential to identify factors within the military setting that influence breastfeeding duration rate and differences in selected variables between mothers who breastfed a minimum of six months and who weaned by four months.

The purpose of this chapter is to identify the specific area of focus for this study. Significance and justification are addressed and the research questions are presented. The concepts of the study are defined. Finally, assumptions and limitations of the study are identified.

Statement of the Problem

Breastfeeding initiation and duration rates in the United States are below those rates proposed for the nation (U.S. DHHS, 1991; Ryan, 1997). The initiation and duration rates of breastfeeding for the selected study site were calculated through a retrospective data collection in early 1996. The breastfeeding initiation rate was 65%, at two weeks the breastfeeding rate was 50%, and by six months the rate had dropped to 30%. Although the facility was above the national statistics, they were still below the goals established for the nation. Action was taken by the site to plan and implement a Breastfeeding Center. In October 1996, the Air Force's first Breastfeeding Center was opened at the selected site. Approximately a year after the opening of the Center, the breastfeeding rates for the site was 76% initiation, 72% breastfeeding at two weeks, and 37% continuation to six months. Improvement in rates was evident, but the six-month

duration showed the least improvement. Little is known about variables influencing breastfeeding mothers in a military environment. Knowledge about the influencing factors would be useful for military medical treatment facilities in developing support programs for breastfeeding families.

Significance and Justification

The American Academy of Pediatrics (AAP) released their latest position statement on breastfeeding in 1997. While always having been advocates of breastfeeding healthy term newborns, the newest statement demonstrates stronger support for breastfeeding by "including premature and sick newborns, with rare exception" ("Breastfeeding and the Use", 1997). The policy statement recommends continuation of breastfeeding for at least 12 months, and as long as mother and child mutually desire thereafter ("Breastfeeding and the Use", 1997). "Human milk is uniquely superior for infant feeding and is species-specific; all substitute feeding options differ markedly from it. The breastfed infant is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short-and long-term outcomes" (Breastfeeding and the Use", 1997, p. 1035).

This study has potential significance for newborns, new mothers, and society. Studies have shown many benefits for breastfed babies, specifically a decrease in the incidence and/or severity of diarrhea (Beaudry, Dufour, & Marcoux, 1995) and otitis media (Duncan et al., 1993). Benefits to mothers who breastfeed include a reduced risk of premenopausal breast cancer (Newcomb et al., 1994). Society benefits by the production of less waste. No bottle liners or formula containers are thrown away in breastfeeding and there are no bottles to be sterilized. There are also direct economic

benefits to the family. More than \$400 can be saved per child for food purchases during the first year alone (Montgomery & Splett, 1997).

The favorable effects of breastfeeding on infant growth and development are well documented. However, national breastfeeding rates have not increased despite the ever-expanding scientific evidence. Real barriers to the initiation and duration of breastfeeding exist. These barriers include lack of education for the mother on breastfeeding issues, embarrassment about breastfeeding in public, perceptions that breastfeeding is more restrictive than bottle-feeding, and a lack of support or even active opposition by members of the mother's social network (Coreil & Murphy, 1988; Marchand & Morrow, 1994; Sullivan, 1996).

Many variables exist that can influence duration of breastfeeding and multiple studies have been conducted to improve understanding of these variables. No studies were found that addressed the military population. The transient nature of the military may result in different influences on duration of breastfeeding. More knowledge is needed regarding factors that affect duration of breastfeeding in the military population.

Statement of Purpose

The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed of mothers in a military environment.

Research Questions

- 1. How do intention, attitude, subjective norm, and perceived behavioral control influence the duration of breastfeeding within a military environment?**

2. Are there any differences between the short-term and long-term breastfeeding groups regarding intention, attitude, subjective norm, and perceived behavioral control?

Definitions

Intention is a behavioral tendency and is assumed to “capture the motivational factors that have an impact on a behavior” (Ajzen, 1988, p. 113). For purposes of this study, breastfeeding intention is defined as degree of certainty a mother places in her decision to breastfeed. Intention will be measured by the mother’s response to a question regarding her plans for infant feeding.

Attitude is the degree to which a person has a favorable or unfavorable evaluation or appraisal of a particular behavior (Ajzen, 1991). This study defines attitude as the degree to which a mother views breastfeeding as a positive or negative action as indicated on the Attitudes Toward Breastfeeding Scale.

Subjective norm is the perceived social pressure to perform or not to perform a particular behavior (Ajzen, 1991). For this study, the behavior being addressed is breastfeeding. A high score on the subjective norm questionnaire correlates with a greater perceived social pressure to breastfeed.

Perceived behavioral control refers to the perceived ease or difficulty of performing a behavior. It is assumed to reflect past experience as well as anticipated impediments and obstacles (Ajzen, 1991). For purposes of this study, perceived behavioral control refers to the mother’s perception of her ability to breastfeed her infant. A high score on the perceived behavioral control questionnaire indicates greater perceived control.

Duration, according to Webster (1984, p. 411), is "continuance in time; period of time during which something exists or lasts". For the purposes of this study, duration will be calculated by the number of months, rounded to nearest month, the mother breastfed from birth to the time of complete weaning or the time of questionnaire completion for mothers who are continuing to breastfeed.

The term **breastfeeding** alone is insufficient to describe the numerous types of breastfeeding behavior. Labbok and Krasovec (1990) divide the term breastfeeding into full, partial, and token. Full breastfeeding is further subdivided into exclusive and almost exclusive categories. Exclusive breastfeeding is when no other liquid or solid is given to the infant. Almost exclusive breastfeeding occurs when vitamins, water, and juice are not given more than once or twice per day and not more than one to two swallows. Partial breastfeeding is subdivided into three categories of high, medium, and low. High is when more than 80% of the feeds are breastfeeds, medium is 79% to 20% of the feeds, and low is less than 20% of the feeds are from the breast. Token breastfeeding is defined as that type of breastfeeding that is characterized by constant restrictions on time and duration of feeding (Labbok & Krasovec, 1990). For the purpose of this study, the mother/baby couple is considered to be breastfeeding if a minimum of one feeding in a 24-hour period is breastmilk.

Military environment is defined as a geographical area where a military base is established. For the purposes of this study, the military base must also have a medical treatment facility where medical care is provided to women who have given birth within the past year.

This study will examine two groups of women: those who breastfed **short-term** and those who breastfed **long-term**. For purposes of this study, short-term includes those

mother/baby couples who stopped breastfeeding by four months and long-term includes those who breastfed a minimum of six months.

Assumptions

1. Mothers want to be informed about the differences in the two methods of infant feeding.
2. Mothers want to provide their infant with the best source of nutrition.
3. Mothers will provide true information when answering questionnaires.
4. Breastfeeding in the military environment is different than in the civilian population.

Limitations

1. The use of a single military base may limit the generalizability of the findings.
2. Use of convenience sampling limits the ability to generalize findings.
3. The internal consistency (theta) for the "subjective norm" questionnaire is below the recommended standard thereby limiting the reliability of the findings.
4. The self-reported answers to the questionnaires present the potential that the participant might not answer the items honestly.

Summary

The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed of mothers in a military environment. The American Academy of Pediatrics (AAP) recommends

breastfeeding for at least 12 months, and as long as mother and child mutually desire thereafter ("Breastfeeding and the Use", 1997). Benefits of breastfeeding are multifaceted and extend beyond the mother and baby into society. In spite of evidence of the superiority of breastmilk, many women choose to bottle-feed or to cease breastfeeding earlier than recommended by the AAP. Factors influencing these choices are the topic of study for this thesis.

Chapter Two includes a review of literature on duration of breastfeeding. A conceptual framework and schematic model designed for this study are also discussed. Methods are presented in the third chapter including research design, setting, population, human subject protection, and sampling plan. Data collection instruments are discussed as well as procedures for data collection and data analysis. The fourth chapter includes the analysis of data. The final chapter concludes the study with a summary, conclusions, limitations, discussion and implications of findings, and recommendations for further study.

II. REVIEW OF LITERATURE

The scientific and lay communities agree that human milk is the best food for most newborn and premature infants. Breast milk provides both nutritional and immunological benefits unequaled by commercially prepared infant formulas. However, national statistics indicate that breastfeeding is not a cultural norm for the United States. Why a woman chooses to breastfeed and to continue to breastfeed has been a topic of study, especially in the last decade. Factors that influence duration of breastfeeding are examined in this chapter. A conceptual model for duration of breastfeeding is also included.

Factors that Effect Duration of Breastfeeding

Ten articles were reviewed which examined factors affecting the duration of breastfeeding. Samples were selected from a variety of settings. Three of the ten obtained subjects from hospitals (Fetherston, 1995; Giugliani, Caiaffa, Vogelhut, Witter, & Perman, 1994; Quarles, Williams, Hoyle, Brimeyer, & Williams, 1994). One research group selected a sample from 44 private and public practices that they stratified before randomly selecting subjects (O'Campo, Faden, Gielen, & Wang, 1992). Other researchers used a computer list of participants in Women, Infants and Children (WIC) Clinics to select a sample (Hawkins, Nichols, & Tanner, 1987). Three of the ten obtained selected samples from multiple sites such as prenatal classes, clinics, WIC enrollees, and a health department (Coreil & Murphy, 1988; Matich & Sims, 1992; Wambach, 1997).

Lawson and Tulloch (1995) recruited subjects from magazines, Nursing Mothers Association of Australia (NMAA) newsletter, and prenatal clinics. Finally, subjects participating in an ongoing prospective study were mailed a questionnaire. The ones who replied made up the sample for the study by Goodine and Fried (1984). Each of the studies used a questionnaire, verbal interview or phone interview to collect data. In addition to a questionnaire or interview, Matich and Sims (1992) used a social support instrument they developed for their study and Wambach (1997) used the Attitudes on Breastfeeding Scale, Breastfeeding Experience Scale, and Hughes Breastfeeding Support Scale.

Two of the articles reviewed had the stated purpose of examining the relationship between breastfeeding intention and duration (Coreil & Murphy, 1988; Quarles et al., 1994). Coreil and Murphy (1988) conducted a longitudinal study with a sample drawn from a population of pregnant women whose sociodemographic characteristics tended to favor successful breastfeeding. Seventy-four women enrolled in the study, but after exclusions for various reasons, 54 women participated in the first two interviews, one before delivery and one four to six weeks postpartum. The third phase of data collection was a mailed questionnaire. Only 44 of the 54 participants responded to the third phase questionnaire. Data analysis used information from the 44 responses. Data regarding the validity and reliability of the questionnaires utilized in the study were not given. Twenty independent variables were examined. Using zero order correlations and chi-square, eight psychosocial and biobehavioral variables were found to be significant predictors of breastfeeding duration: age, intended duration, confidence in ability to breastfeed, degree of social support, early first feeding (within one and one-half hours after birth), continuity of breastfeeding, milk expression, and absence of supplementation. Of the eight, two

were significant at 0.05 or less. Intended duration ($F=12.78$, $p<0.01$) and formula supplementation ($F=4.74$, $p<0.05$) were identified as independent predictors of breastfeeding duration. These two factors together explained 48% of the variance in the dependent variable.

Quarles et al. (1994) selected a convenience sample of 161 mothers from two different hospitals, one with a lactation consultant and the other without. Due to the convenient location of the hospital without the lactation consultant, more participants were selected from there. An identified limitation of the study was that there were significant differences in subjects from the two sites in regards to age ($t=3.59$, $p<.001$), mothers' mean educational level ($t=6.26$, $p<.001$), and fathers' mean education level ($t=7.66$, $p<.001$). The older, more educated mothers and fathers received care in the hospital with the lactation consultant. These parent demographics have been associated with longer duration of breastfeeding. Prior to discharge from the hospital, mothers were interviewed on topics such as choice of feeding method, reasons for choice, intended duration of breastfeeding, and if they intended to return to work or school. One month and again at four months after discharge, the same nurses conducted telephone interviews to determine current feeding practices and reasons for any changes. Validity and reliability information on the questionnaires and interviews used were not provided. A t-test was used to determine differences in the mean duration of breastfeeding between mothers from the two hospitals. Findings showed that the mean duration of breastfeeding was significantly longer ($t=2.33$; $p<.02$) for mothers giving birth at a hospital with a lactation consultant (mean=3.1 months, $SD = .2$; mean=2.4 months, $SD=1.2$, respectively). Attainment of intended duration of breastfeeding was calculated by subtracting length of intended duration of breastfeeding (maximum length being four, the

longest period for follow-up) from actual duration to get an ATTAIN score. In an attempt to control for the varying patient characteristics between the two hospitals, final ATTAIN scores were only calculated on those considered "non-poor". Using a one-tailed Mann-Whitney U-test, findings indicated that more mothers from the hospital with a lactation consultant were likely to attain their intended duration of breastfeeding ($Z=-1.94$, $p=.03$). The final phase of the study examined the relation of seven variables to actual duration. A stepwise multiple regression analysis using duration as the dependent variable was completed on data from all subjects in the study. Results indicated that only three of the seven variables were significant. Stated length of breastfeeding intention explained 18% of the variance, maternal age contributed about 9%, and mother's education contributed about 3%.

Identifying the types and sources of support for breastfeeding and the effect of support on duration was the purpose in three of the articles examined (Giugliani et al., 1994; Matich & Sims, 1992; Quarles et al., 1994). Quarles et al. (1994) found that the mean duration of breastfeeding was significantly longer for mothers giving birth at a hospital with a lactation consultant than one without and these same mothers were more likely to attain their intended duration of breastfeeding. Giugliani et al. (1994) completed a cross-sectional study, which compared 100 breastfeeding mothers and 100 bottle-feeding mothers. Subjects were randomly selected from the population of primiparous women who gave birth between April and November of 1992. Subjects completed a questionnaire that asked information on sociodemographic characteristics as well as sources of support the authors thought could have influence on infant feeding decisions. Variables examined were health services utilized, number of prenatal visits, attendance at prenatal classes, opinion of male partner about breastfeeding, and breastfeeding support

provided by health professionals and lay people. An open-ended question was used to explore reasons they chose breast or bottle-feeding. Validity and reliability information for the questionnaire used was not given. Analysis included a frequency distribution of all variables. Chi-square test or Fisher's exact were used to compare proportions. The impact that variables such as maternal age, race, marital status, and education might have on the association between feeding method chosen and sources of breastfeeding support were taken into consideration in the logistic regression analysis. A favorable attitude of partners towards breastfeeding was the most important factor associated with choosing to breastfeed (selected by 98%, OR= 32.8). Attendance at prenatal classes and support for breastfeeding from lay people increased the odds of breastfeeding 2.7 to 3.3 times, respectively.

Matich and Sims (1992) did a comparison of social support variables between women who intended to breastfeed and those who intended to bottle-feed. The purpose was to identify perceived sources, types, and amount of social support for women in their third trimester of pregnancy and after three to four weeks of breastfeeding. The non-random sample consisted of 159 women in their third trimester. Of the 159, 85 intended to breastfeed and 74 intended to bottle-feed. The tools consisted of a questionnaire used to determine sources, amounts, and types (emotional, tangible, and informational) of perceived support and a social support instrument which was developed by the investigators for the purpose of the study. No validity and reliability information was given on the questionnaire used. However, experts in nutrition and social support measurement evaluated content validity on the social support instrument. Construct validity was determined by factor analysis (actual statistics not given). Scale reliability for tangible, emotional, and informational support was determined to be 0.88, 0.94, and

0.93 respectively. Data were analyzed in several ways to determine how well all independent variables, when combined, explained variations in the dependent variable. A number of conclusions were drawn from the study. Those who intended to breastfeed had greater informational support than those with the intention to bottle-feed (mean 2.32, SD 0.9 vs mean 2.00, SD 1.0, $t=2.03$, $p<0.05$). The baby's father provided the greatest tangible (mean 4.08, SD 1.4, $p<0.05$), emotional (mean 4.20, SD 1.5, $p<0.05$), and informational (mean 2.19, SD 1.5, $p<0.01$) support. The importance of the role of the mother's partner was also supported in studies by Fetherston (1995), Giugliani et al. (1994), and O'Campo et al. (1992). A non-linear direction of social and tangible support was also identified. For example, women who cared only a little about what friends think, are more likely to breastfeed, whereas women who fell on the axis of caring very much or not caring at all about what friends think were more likely to bottle-feed. This study was extensive in the variables addressed and the analysis of those variables.

Four of the studies examined variables that were associated with or influenced duration (Fetherston, 1995; Goodine & Fried, 1984; Lawson & Tulloch, 1995; O'Campo, Faden, Gielen, & Wang, 1992). Fetherston (1995) used a questionnaire and telephone interview to gather data on 69 new mothers from one hospital. Validity and reliability information was not given on the instruments. Using a frequency distribution, personal beliefs and convictions were determined to be the major influence on the decision to breastfeed (91%, $n=65$). Mean rank of mothers' perception of the importance of factors influencing their breastfeeding success found personal determination (1.26) ranked more important than partner (2.61), lactation consultant (2.71), midwives (3.30), and doctor (4.60). ANOVA was used to determine significance in the rankings and a significance was found between the five groups ($F=46.8$; $df=4.153$; $p<0.0001$). A significant

difference was identified between personal determination and each of the four other groups. Partner and lactation consultants were rated similarly ahead of midwives but this was not statistically significant. In this study, sore nipples was the most common difficulty faced ($n=65$, 46, 71%), but attachment difficulties ($n=65$, 35, 54%) caused more women to consider weaning ($n=65$, 12, 34%). An identified limitation of this study was the fact that the sample was selected from a private maternity hospital where the majority of the clients were affluent.

Goodine and Fried (1984) performed a retrospective study with a subsample from an ongoing prospective study. The subsample of 361 women whose children were at least one year of age received a multifaceted questionnaire. The questionnaire addressed items such as demographics, prenatal decisions regarding feeding choice, anticipated length of breastfeeding, feeding method used in hospital, first few weeks postpartum, first month, 3 to 6 months, and 6 to 12 months, reasons for any feeding changes that occurred during those time frames, age of introduction to solids, and use of alcohol, nicotine and marijuana. Two hundred and eighty-eight (78%) questionnaires were returned. Validity and reliability of the questionnaire were not reported. Results of the study show those mothers who reported making the decision to breastfeed pre-pregnancy had a longer duration of breastfeeding than those who reported making the decision during pregnancy (9 months, SD 6.39; 7.9 months, SD 8.25, respectively). The most frequently cited reason for choosing breastfeeding or combining breast and bottle-feeding was "best for baby" (94% and 81%, respectively). The median age of weaning was 7.1 months. The primary reason for stopping breastfeeding within the first month was perceived insufficient supply of breast milk whereas, at 3 to 6 months, the primary reason was convenience. Other reasons given for stopping breastfeeding or introducing

supplementation included: difficulty with nursing technique, medical problem of mother or child, discomfort, return to work or school, and the child was developmentally ready. Those mothers who had graduated from a university were more likely to breastfeed than those whose maximum education was some high school (93.1% to 66.7%, respectively; Variance = 14.07, $df = 3$, $p < .003$). The length of time the woman breastfed was associated with use of supplementation in the hospital. Those who supplemented in the hospital, breast-fed an average of 7.3 months (SD 5.27) whereas those who did not use supplementation continued for an average of 9.8 months (SD 6.96). Two limitations of the study are the homogenous sample and use of retrospective data collection. The latter relies on accurate reports from memory and is a known limitation of such studies.

Lawson and Tulloch's (1995) sample consisted of primiparas recruited from three areas. The majority of respondents were 18 to 35 years of age with one being under 18 and four being over 35. The method of study included a prenatal and postnatal questionnaire for which there was no validity and reliability information. On recruitment to the sample, the mothers ($n=78$) completed the prenatal questionnaire. The same women were sent the postnatal questionnaire three months after their due date (return $n=66$, 85%). Discriminate function analysis was used to identify variables for predicting duration of breastfeeding. Correlations with pre and post-birth predictor variables showed education (0.51), timing of first feed (-0.48), and a negative attitude toward formula (0.44) as having the greatest prediction value on duration of breastfeeding. Number of feeding problems was not statistically significant. The most common reason for not breastfeeding or for supplementing feeds was perceived insufficient milk supply (43%), quality of milk perceived as inadequate for weight gain (18%), suggestion by medical personnel (14%), baby fussy at breast (10%), fatigue (7%), sore nipples (4%),

and desire to introduce solids to vary diet (4%). The mean number of breastfeeding problems experienced by each woman was 3 (SD 1.9) with the most common ones being fatigue, sore nipples, engorgement, and cracked nipples. The authors suggested the need to educate new mothers on the range of normal behaviors of the breastfed infant in an effort to lengthen the duration of breastfeeding.

A questionnaire and telephone interview was used by O'Campo et al. (1992) to collect their data. The sample was taken from 1900 women who agreed to participate in the study. These women were stratified by ethnicity, years of schooling, and intended infant feeding method. Respondents were then randomly selected for interview (n=491). All interviews were conducted by telephone and were approximately 40 minutes in length. No validity and reliability information was given on the instrument used to collect data. Eight study variables were addressed in the interviews: behavioral beliefs, normative beliefs (scales for both were constructed in conformity with Ajzen and Fishbein's guidelines), social learning, maternal confidence, anticipated length of breastfeeding, medical complications, plans to return to work or school, and breastfeeding duration. Using a D.R. Cox proportional hazard analysis, five variables were determined to be significant for duration of breastfeeding: anticipated length of breastfeeding ($\beta = 0.72$, $s.e. = 0.359$), maternal self confidence ($\beta = 0.28$, $s.e. = 0.101$), normative beliefs about breastfeeding ($\beta = 0.07$, $s.e. = 0.026$), social learning ($\beta = 0.10$, $s.e. = 0.051$) and behavioral beliefs ($\beta = 0.04$, $s.e. = 0.016$). Because anticipated length of breastfeeding was found to significantly influence breastfeeding duration, a further analysis on this variable was completed using linear regression methods. Prenatal factors that influenced anticipated length of breastfeeding were plans

to return to work or school by six months postpartum ($\beta = 0.31$, $s.e. = 0.12$) and maternal confidence in her own ability to breastfeed ($\beta = 0.22$, $s.e. = 0.21$).

Finally, two of the studies had the stated purpose of examining predictors of breastfeeding duration (Hawkins et al., 1987; Wambach, 1997). In a descriptive study done by Hawkins et al. (1987), 47 women were randomly selected from a computer list of WIC enrollees whose babies were under 18 months old. A verbal interview was chosen as the method to collect data due to the education level of the sample. The interview was tested on 11 low-income women who were not eligible to participate in the study. Revisions were made and then tested on 10 more women. Content validity was determined by representativeness of the questions, breastfeeding literature and evaluation by an expert in the field of breastfeeding. Using Pearson Product Moment, biserial correlations, and chi-square analysis, five out of 32 variables were found to have the greatest influence on duration of breastfeeding. The five variables were age at introduction of solids, perceived success at breastfeeding, education level, income, and age at introduction of supplements. Four of the variables, with the exception of age at introduction of supplements, explained 52% of the variance. The best predictor of breastfeeding duration was determined to be the age at introduction of solids (correlation 0.526, $p < 0.001$, 32% of variance). Also, maternal age was an important factor shown by 90% of mothers over 31 years of age being moderate (five to 24 weeks) or long term (25 weeks or longer) breastfeeders. The authors suggested replication studies using larger samples and other low-income populations to avoid some of the limitations of their study.

Multiple instruments were used to collect data for a study by Wambach (1997). The author chose a convenience sample of 135 mothers from various settings in a large Midwestern metropolitan area. The mothers completed several measures. The Attitudes

on Breastfeeding Scale (Cusson, 1985) measured attitudes toward different aspects of breastfeeding (Cronbach's $\alpha = .71$ to $.70$, for this sample = $.80$). Two scales created using Ajzen's guidelines measured subjective norm (theta coefficient = $.64$) and perceived behavioral control (Cronbach's $\alpha = .70$ for this sample). Telephone interviews measured duration and a one-item scale was used to determine intention (test-re-test reliability = $.90$). The Breastfeeding Experience Scale (internal consistency with alpha coefficient = $.76$), and the Hughes Breastfeeding Support Scale (internal consistency = $.83$ to $.89$, Cronbach's α for this sample = $.91$ to $.95$) were also used. The study had three major conclusions: attitude and perceived behavioral control influenced intention the most (adjusted $R^2 = .23$, $F = 21$, $p < .001$); intention affects duration ($R^2 = .04$, $F = 6.7$, $p = .01$); and the dominant predictor of intention is attitude.

Several themes were found in the review of literature. A common finding of the studies reviewed is that older married women who are middle class and have a higher education are more likely to choose breastfeeding. However, findings vary as to the effect of these variables on duration. The most common variable studied was support. Five of the eight who examined this variable found that different types of support have an influence on the duration of breastfeeding (Coreil & Murphy, 1988; Fetherston, 1995; Giugliani et al., 1994; Matich & Sims, 1992; Quarles et al., 1994). Anticipated length of breastfeeding was the second most studied variable and was examined in seven of the ten articles (Coreil & Murphy, 1988; Fetherston, 1995; Lawson & Tulloch, 1995; O'Campo et al., 1992; Quarles et al., 1994). Five of the seven found anticipated length to be an influential variable in duration of breastfeeding. None of the studies reviewed involved samples from a military population. The military environment may present different factors that influence duration of breastfeeding. In order to design and implement

breastfeeding programs and services for military personnel, studies focusing on factors influencing duration of breastfeeding in this particular population are needed.

Conceptual Framework

The conceptual framework for this study is based on Ajzen's theory of planned behavior (Ajzen, 1988; Ajzen & Madden, 1986) (see Figure 1). This theory assumes that behavior is located along a continuum from complete willful control of behaviors to no willful control. Variables within the theory of planned behavior are perceived behavioral control, behavioral attitude, and subjective norm (Ajzen, 1988). *Perceived behavioral control* is the perceived ease or difficulty of doing a particular behavior and reflects "past experience as well as anticipated impediments and obstacles" (Ajzen, 1988, p. 132). *Attitude* is the degree of positive or negative value place on a particular behavior, in this case, breastfeeding. *Subjective norm* is the "person's perception of social pressure to perform or not perform the behavior under consideration" (Ajzen, 1988, p. 117). These three variables are said to influence behavior indirectly through intentions. Intention affects behavior (Ajzen, 1988).

Ajzen's theory of planned behavior does not deal directly with the amount of actual control a person has in a situation, but considers possible effects of the amount of perceived behavioral control. Intentions reflect an individual's willingness to try a particular behavior, whereas perceived control takes into account some of the realistic constraints that may exist (Ajzen, 1988). For example, with breastfeeding, plans to return to school or work may influence one's decision on initiation and duration of breastfeeding. Another important aspect of the theory is the identification of the possibility of a direct link between perceived behavioral control and behavior. This link

identifies the idea that perceived behavioral control can influence behavior indirectly or it can be used to predict behavior directly because it may be considered a partial substitute for a measure of actual control (Ajzen, 1988).

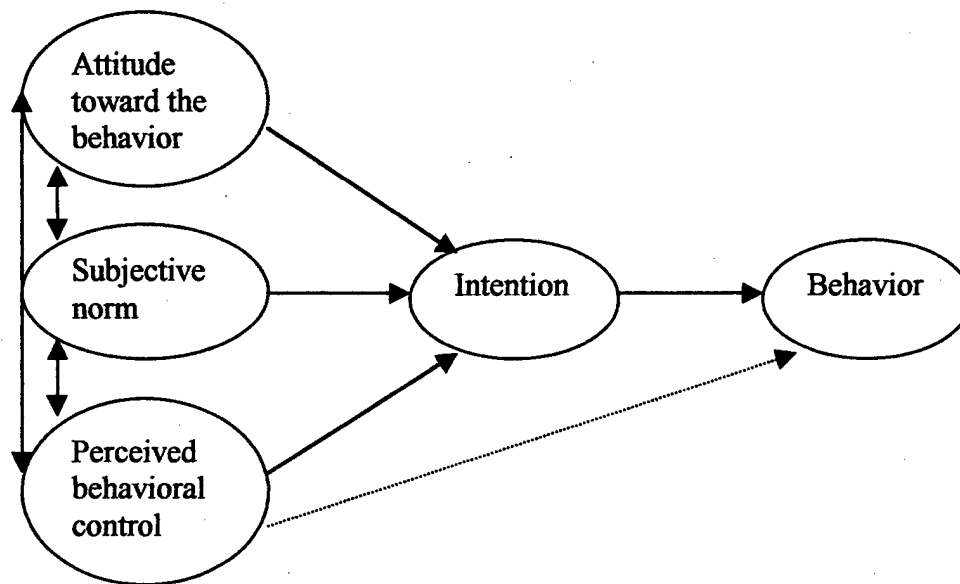


Figure 1. Theory of planned behavior.

Note. From *Attitudes, Personality, and Behavior* (p.133), by I. Ajzen, 1988, Milton Keynes: Open University Press. Copyright 1988 by Icek Ajzen. Reprinted with permission (Appendix A).

Multiple factors have been identified that can play a part in the initiation and duration of breastfeeding, thus breastfeeding is an action that is not completely under willful control. Variables considered in this study were intention to breastfeed, attitude toward breastfeeding, social pressure to breastfeed, and confidence in one's ability to breastfeed. Demographic data was also gathered. (See Figure 2).

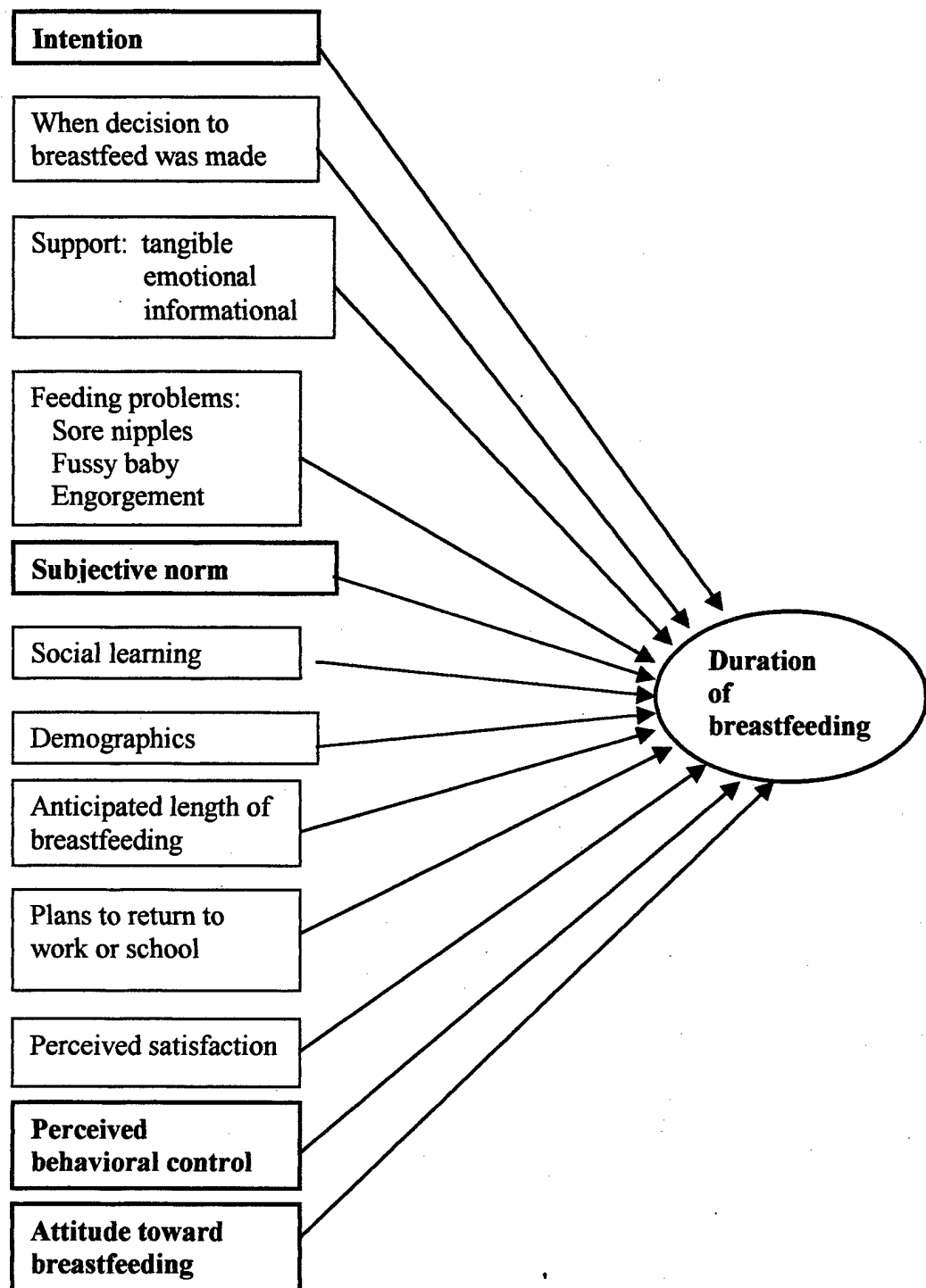


Figure 2. Doyle's Conceptual Model of factors which can influence duration of breastfeeding. Hi-lighted boxes are included in present study.

Summary

Chapter Two has included a review of literature regarding factors that affect the duration of breastfeeding. A few studies focused on comparing different groups of women and their choice to breastfeed and how long they breastfeed. In spite of documented advantages to baby, mother, family, and society when breastfeeding is initiated and continued (Beaudry et al., 1995; Dewey, Heinig, & Nommsen-Rivers, 1995; Duncan et al., 1993; Kovar, Serdula, Marks, & Fraser, 1984; Montgomery & Splett, 1997; Newcomb et al., 1994), the national average in 1995 for initiation and duration to six months was 59.4% and 21.6%, respectively (Ryan, 1997). These percentages are well below the proposed goal set forth in Healthy People 2000 of 75% initiation and 50% continuing to breastfeed for six months (U.S. DHHS, 1991). Samples for studies on breastfeeding have been drawn from a variety of settings. However, no studies using the military population were found.

III. METHODS

The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed of mothers in a military environment. Literature supports multiple factors as being influential in the mother's decision to breastfeed and to continue breastfeeding. This chapter includes an explanation of the process used to assess differences in selected variables among two groups: those who initiated breastfeeding but stopped by four months and those who initiated breastfeeding and continued to breastfeed for at least six months. The research design is explained, the setting and population discussed, and the sampling plan is illustrated. Ethical considerations are addressed. Instruments used in data collection are introduced and discussed. Data collection and data analysis are outlined.

Research Design

A comparative descriptive research design was chosen to examine characteristics of the selected sample. This design examines and describes differences in variables in two or more groups that occur naturally in the setting (Burns & Grove, 1997). Differences between or among groups are examined using descriptive statistics and inferential statistical analyses (Burns & Grove, 1997). Relationships among variables are identified to obtain an overall picture of the phenomenon being examined, but examination of types and degree of relationships is not the primary purpose of a descriptive study (Burns & Grove, 1997).

Setting

The site selected for this study was a 301 bed military facility located in the Midwest. In 1998, 617 births occurred at the facility and 498 (80.7%) of these mothers initiated breastfeeding. Utilizing a military hospital was vital to this study because the research questions relate specifically to individuals involved with the military. To the author's knowledge, no literature that examines the selected variables in a military environment has been published. Permission for accessing this agency is noted in Appendix B.

Population

The target population for this study consisted of mothers affiliated with the military that initiated breastfeeding. Individuals who were being, or had been, followed through the Breastfeeding Center at the military medical treatment facility made up the accessible population. The population included active duty and retired personnel or dependents thereof.

Sampling Plan

Available clients who had breastfed a healthy, full-term singleton baby for a minimum of six months constituted the first group. Available clients who initiated breastfeeding a healthy, full-term singleton baby but ceased breastfeeding by four months constituted the second group. A convenience sample of mothers eligible for the study was selected utilizing records kept at the selected site's Breastfeeding Center. The convenience sample is a type of non-probability sample. Convenience samples are inexpensive, accessible, and usually require less time to acquire than other samples. The

most significant limitation of this type of sample is that known and unknown biases may exist within the sample (Burns & Grove, 1997). Given known biases, steps can be taken to improve the representativeness of the sample, but results cannot be generalized beyond the sample (Burns & Grove, 1997).

The initial plan was to contact 60 mothers from each group in anticipation of a 50% return rate. The goal to receive thirty questionnaires from each group was based on a power analysis by the Wright State University Statistical Consulting Center. The components of a power analysis are related to the level of significance and the statistical tests to be used (Burns & Grove, 1997). It was not possible to contact the expected number of mothers from each group within the time frame of this study. Thus the sample size was smaller than anticipated.

Human Subject Protection

Human subjects have identified rights that must be protected during research. As assurance of protecting the rights of all persons involved in or with this thesis, the criteria for the Institutional Review Board for Human Subjects at Wright State University (Appendix C) and the selected site (Appendix D) document protection measure approval.

According to Burns and Grove (1997, p. 200) human rights "include the rights to (1) self-determination, (2) privacy, (3) anonymity and confidentiality, (4) fair treatment, and (5) protection from discomfort and harm". Each right was addressed as follows:

Self-determination - Potential participants were invited via phone to participate in the study. Each mother was informed that her choice to participate was optional and would in no way affect her treatment. She was also informed that she could

withdraw from the study at any time. Those who agreed to participate were mailed the selected instruments for completion. Return of the completed instruments served as consent for participation.

Privacy – Individual responses are not identifiable. Only group responses are addressed in the results.

Anonymity and Confidentiality – With the exception of four returned questionnaires, there were no return addresses on the envelope making linkage of answers to the participant impossible. For the four who did include a return address, their questionnaire was immediately separated from the return envelope and placed with the other data making linkage of their responses to themselves impossible.

Right to fair treatment – All clients being followed through the Breastfeeding Center continued to receive care through the Center regardless of involvement in study.

Right to protection from discomfort and harm – No known risks or harm were anticipated or identified for the mothers who chose to participate in this study.

Instruments

The instruments used for this study were a demographic survey (Appendix E), Attitudes Toward Breastfeeding Scale (ATBS) (Appendix F), and questionnaires to measure subjective norm (Appendix G) and perceived behavioral control (Appendix H). A single question to measure breastfeeding intention was added to the perceived behavioral control questionnaire. Permission to use these instruments was granted (Appendix I).

The Attitudes Toward Breastfeeding Scale (ATBS) is an 18-item, 5-point, Likert-type scale originally designed to measure facets of adolescent girls' attitudes toward breastfeeding, including advantages of breastfeeding, convenience or inconvenience of breastfeeding, and whether breastfeeding is worthwhile despite reported inconvenience. Participants circle the letters that best corresponds to their attitude toward breastfeeding. Responses range from *strongly disagree* (SD) to *strongly agree* (SA). Mean scores are obtained with higher scores indicating more positive attitudes toward breastfeeding. Reported internal consistency estimates, using Cronbach's alpha, have ranged from .71 to .79 (Cusson, 1985).

Ajzen's (1988) guidelines were used to develop instruments to measure "subjective norm" and "perceived behavioral control". The questionnaire used to measure "subjective norm" contains two sets of four questions with 7-point scales. The first set of four has end points of *definitely should breastfeed* (7) and *definitely should bottle-feed* (1). This scale is used to determine the mother's beliefs about significant others' infant-feeding expectations. The second set of four questions evaluate the mother's motivation to comply with significant others' expectations and have end points of *do not care at all* (1) and *care very much* (7). The score is derived by multiplying each expectation by the corresponding compliance item and summing the four products (possible range 1 to 49). The higher the score, the greater the perceived social pressure to breastfeed. Internal consistency of the 4-item measure has been assessed using a theta coefficient at .64 (Wambach, 1997). The results of the theta coefficient are below the recommended standards of .80 for a well-developed measurement tool and .70 for a newly developed instrument (Burns & Grove, 1997).

"Perceived behavioral control" was measured using a questionnaire that is a four item, 7-point scale. For example, one item reads "if I wanted to, I could easily breastfeed my infant for the intended time period". The end points are *extremely likely* (7) to *extremely unlikely* (1). The scores were summed and divided by the number of items for a possible mean score ranging from 1 to 7. Higher scores indicate greater perceived control. Internal consistency reliability of the questionnaire was determined using Cronbach's alpha (.70) (Wambach, 1997). As mentioned above, .70 is acceptable for a newly developed instrument.

One question was used to measure breastfeeding intentions. The question consists of a 7-point scale, containing end points of *definitely will bottle-feed* (1) and *definitely will breastfeed* (7). The midpoint of the scale represents *unsure of feeding plans*. Test-retest reliability at 2 weeks was .90 (Wambach, 1997). One-item measures of intention have been used in previous theory of reasoned action research (Manstead, Proffitt, & Smart, 1983; Young, Lierman, Powell-Cope, Kasprzyk, & Benoliel, 1991; Wambach, 1997).

Procedures

For actual data collection the researcher utilized existing records from the selected site's Breastfeeding Center. Beginning at the time approval was obtained from the Investigational Review Boards (IRB) for the selected site and college, the researcher counted back six months and pulled those records from the files. Breastfeeding Center practice protocol includes a follow-up phone call to all breastfeeding mothers two to five days after going home, and again at two, four, six, and twelve months or until the mother

states she has stopped breastfeeding. The follow-up phone call was made by the researcher using established protocols and questionnaires. After completing the questions per current protocol, the principle investigator identified the research study and described its objective. The women were then asked if they were interested in participating. This procedure was followed for three months.

The number of mothers still breastfeeding at the six-month mark for each of the three months called was 13, 15, and 13. The goal of 60 contacts and participants from this group was not obtained due to lack of eligible participants within the time constraints of the study. However, the goal of obtaining 30 questionnaires (based on power analysis) was obtained. From the selected records of mothers still breastfeeding, forty-one were eligible to participate. Forty could be contacted and all agreed to participate. Forty questionnaires were mailed out and thirty-five were returned for an 88% return rate.

Once a mother has identified that she has weaned her baby from the breast, her name is hi-lighted on the Breastfeeding Center records as a reminder for Breastfeeding Center personnel to no longer do breastfeeding follow-up calls on her. Again, once IRB approval was obtained, the researcher counted back two and four months and pulled those records from the files. Those mothers who were identified in the records as having weaned were contacted. Upon contact of the eligible individuals, the principle investigator identified the research study and described its objective. The women were then asked if they were interested in participating. Again, this procedure was followed for three months.

The first set of records pulled from the Breastfeeding Center identified two mothers who had weaned by that particular four-month time frame and nine who had weaned by the two-month time frame. The second set of records pulled, during the

second month of data collection, identified seven who had weaned by the four-month mark and six who had weaned by the two-month mark. The records pulled during the last month of data collection identified there were no women who had weaned by the four-month mark and four who had weaned by the two-month mark. As with the first group, the goal of 60 contacts and participants from this group was not obtained due to lack of eligible participants within the time constraints of the study. From the selected records of mothers who had initiated breastfeeding but weaned by four months, twenty-seven were eligible to participate. Of the twenty-two who could be contacted, two declined participation. Twenty questionnaires were mailed out and eighteen were returned for a 90% return rate.

In an effort to keep the study participants within the same general time frame, only mothers who were at the six-month mark of breastfeeding at the time of calling were contacted and invited to participate. Similarly, only mothers who had weaned within the past four months, at the time of calling, were contacted and invited to participate. By the time some mothers who were still breastfeeding at six-months received their questionnaire and completed it, they were at, or close to the seven-month mark. That accounts for the mothers in the study who reported a seven-month duration. The rationale for using two-month and four-month time frames to contact mothers who had weaned is based on the method of record-keeping at the selected site's Breastfeeding Center.

Those mothers who agreed to participate were immediately mailed the questionnaire with return postage paid envelopes included. A cover letter explaining the study was included in the packet (Appendix J). Return of the completed instruments served as consent for participation in the study. This route of consent was chosen rather

than having the participants include a signed consent which disregards the concept of confidentiality. All participants in this study had given birth within the last seven months.

Data Analysis

The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed of mothers in a military environment who have breastfed a minimum of six months and who weaned by four months. The research questions of concern were answered using descriptive statistics, correlation analysis, multiple regression analysis, and t-test. The Wright State University Statistical Consulting Center was consulted for statistical testing and data analysis. The following is a list of research questions and the statistical analysis conducted for each question.

1. How do intention, attitude, subjective norm, and perceived behavioral control influence the duration of breastfeeding within a military environment?

Correlation analyses were used to explore the relationships between intention, attitude, subjective norm, perceived behavioral control and the duration of breastfeeding. Correlational analysis is a "statistical procedure conducted to determine the direction (positive or negative) and the magnitude (or strength) of the relationship between two variables" (Burns & Grove, 1997, p. 778). Additionally, multiple regression analysis was used to examine the simultaneous joint relationships of the selected variables to the effect of breastfeeding duration. Multiple regression is an extension of the simple linear regression. More than one independent variable is entered into the analysis and the

purpose is to predict or explain as much of the variance in the value of the dependent variable as possible (Burns & Grove, 1997).

2. Are there any differences between the short term and long term breastfeeding groups regarding intention, attitude, subjective norm, and perceived behavioral control?

To compare intention, attitude, subjective norm, and perceived behavioral control between the two groups of short and long-term breastfeeders, t-tests were conducted. The t-test is used to test for significant differences between statistical measures of two samples (Burns & Grove, 1997).

Summary

For purposes of this study, the researcher used a comparative descriptive research design. The sample was drawn from a military population of women who had breastfed a minimum of six months and those who initiated breastfeeding but stopped breastfeeding by four months. Several instruments were utilized to collect data. Validity and reliability statistics were adequate for all instruments with the exception of the questionnaire to measure subjective norm. The internal consistency (theta) for this particular instrument was below recommended standards. Descriptive statistics, correlation and multiple regression analysis, and t-tests were used to analyze the data collected.

IV. ANALYSIS OF DATA

The purpose of this chapter is to present the data regarding intention to breastfeed, attitude toward breastfeeding, subjective norm, perceived behavioral control, and duration of breastfeeding among women in a military environment who chose to breastfeed. The data were analyzed using descriptive statistics, correlation coefficient, multiple regression analyses, and t-tests. A Demographic Questionnaire, Attitudes Toward Breastfeeding Scale (ATBS), Subjective Norm and Perceived Behavioral Control Questionnaire, and a one-item measure of intention were the instruments used for data collection. The data are organized and presented beginning with a description of the sample, followed by descriptive statistics for the study variables, and finally according to the two research questions. The Wright State University Statistical Consulting Center provided the computer analysis. The SAS Version 6.12 was used to derive the statistics.

Description of Sample

The age range at time of delivery for the sample (n=52) was 19 to 43 years (mean = 29). Education level (n=53) ranged from less than a high school diploma (n=1) to doctoral degrees (n=2). Reported annual income level for the sample (n=51) ranged from less than \$20,000 to over \$50,000. Ethnic backgrounds included Caucasian (n=45, 85%), African American (n=3, 5.6%), Hispanic (n=2, 3.8%), other (n=2, 3.8%), and American Indian (n=1, 1.8%). Of the 53 participants, one was unmarried and the other 52 were married. Of the sample (n=53), 52 responded to the amount of time spent working

outside the home or attending school. Twenty-three (44%) did not work outside the home. The remainder of the respondents chose from work over 40 hours per week (n=18, 35%), work less than 20 hours per week (n=5, 9.6%), work 20 to 40 hours per week (n=3, 5.7%), full-time college (n=2, 3.8%), or part-time college (n=1, 1.9%). Military status was reported as dependent of active duty (n=40, 75.5%), active duty (n=10, 18.8%), or dependent of retired (n=3, 5.7%). Table 1 presents descriptive statistics on the sample's demographics broken down into long-term (n=35, 66%) and short-term (n=18, 34%) breastfeeders.

Table 1

Demographic Characteristics of Sample

Variable	Long-term breastfeeders (n=35, 66%)		Short-term breastfeeders (n= 18, 34%)	
Level of Education	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
< high school diploma	1	2.9		
high school dip/GED	5	14.3	4	22.2
1-4 years college/no degree	9	25.7	8	44.4
Associate degree	2	5.7	1	5.6
Bachelors degree	10	28.6	4	22.2
Masters degree	6	17.1	1	5.6
PhD	2	5.7		
Annual Income				
< \$20,000	1	2.9	1	5.9
\$20,000-30,000	7	20.6	1	5.9
\$30,000-40,000	5	14.7	6	35.3
\$40,000-50,000	10	29.4	4	23.5
> \$50,000	11	32.4	5	29.4
Ethnic Background				
African American	3	8.6		
Caucasian	28	80.0	17	94.4
American Indian	1	2.9		
Hispanic/Latin American	2	5.7		
Other	1	2.9	1	5.6
Marital Status at Delivery				
Unmarried	1	2.9		
Married	34	97.1	18	100.0
Work or Attend School				
College/full-time	1	2.9	1	5.6
College/part-time	1	2.9		
Work < 20 hours/wk	4	11.8	1	5.6
Work 20-40 hours/wk	3	8.8		
Work > 40 hours/wk	8	23.5	10	55.6
Do not work outside home	17	50.0	6	33.3
Military Status				
Active Duty (AD)	5	14.3	5	27.8
Dependent of AD	27	77.1	13	72.2
Dependent of Retired	3	8.6		

The women from both groups were predominantly educated and middle class. The majority of participants were Caucasian and married. However, more differences were noted between the two groups in regards to the number of hours at work/school and their military status.

A higher percentage of the long-term breastfeeders (n=17, 50%) claimed not to work outside the home than women in the short-term breastfeeding group (n=6, 33.3%). More women in the short-term breastfeeding group (n=10, 55.6%) reported working more than 40 hours a week than women in the long-term breastfeeding group (n=8, 23.5%) (Table 1).

Responses to military status presented another difference in the sample. While only five women in each group were active duty military, this number represents 14.3% of the long-term breastfeeding group and 27.8% of the short-term breastfeeding group (Table 1). Whether any or all of these demographic differences could influence the finding of this study is something that must be considered when interpreting the data. Both groups are smaller than the originally anticipated sample size and this also needs to be considered when interpreting the data.

In regards to anticipated length of breastfeeding, both groups provided a range of responses. However, 62.9% (n=22) of the women still breastfeeding at six months anticipated breastfeeding for at least one year, while only 16.7% (n=3) of the women in the short-term breastfeeding group anticipated breastfeeding for a year (Table 2).

Table 2

Anticipated Length of Breastfeeding

Variable	Long-term breastfeeders (n=35, 66%)		Short-term breastfeeders (n= 18, 34%)	
Anticipated length of breastfeeding				
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Unsure	2	5.7	2	11.1
2 months			2	11.1
3 months			2	11.1
4 months			1	5.6
6 months	7	20.0	4	22.2
7 months			1	5.6
8 months	1	2.9	2	11.1
9 months	2	5.7	1	5.6
11 months	1	2.9		
12 months	20	57.1	3	16.7
18 months	1	2.9		
24 months	1	2.9		

Obviously the two groups differ in actual length of breastfeeding. For those women who are characterized as long-term breastfeeders approximately half (n=18, 51.4%) have been breastfeeding for six months and half (n=17, 48.6%) are still breastfeeding at seven months. A key time for women in the short-term breastfeeding group to discontinue breastfeeding was at two months, by which time 83.3% (n=15) of the women had stopped breastfeeding (Table 3).

Table 3

Length of Breastfeeding

Variable	Long-term breastfeeders (n=35, 66%)		Short-term breastfeeders (n= 18, 34%)	
Length of breastfeeding				
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
2 weeks			2	11.1
1 month			5	27.8
2 months			8	44.4
3 months			2	11.1
4 months			1	5.6
6 months	18	51.4		
7 months	17	48.6		

Descriptive Statistics for Study Variables

In considering the data that was analyzed for this study, each instrument provided different information. The data collection instruments were used to measure intention to breastfeed, mother's attitude toward breastfeeding, subjective norm, perceived behavioral control, and duration of breastfeeding. Table 4 is a summary of the descriptive statistics of these variables.

Table 4

Total Sample Scores of Breastfeeding Intention, Attitude Toward Breastfeeding, Subjective Norm, Perceived Behavioral Control, and Duration of Breastfeeding

Scale	N	Mean	Standard Deviation	Score Range
Intention to Breastfeed	53	6.7	1.0	1-7
Attitude Toward Breastfeeding	53	3.8	0.5	1-5
Subjective Norm	47	27.5	9.0	1-49
Perceived Behavioral Control	53	5.5	1.6	1-7
Duration of Breastfeeding	53	4.9	2.4	2 weeks-7 months

In general, the mothers in this study (n=53) had a strong intention to breastfeed before the baby was born (mean = 6.7). They had a positive attitude toward

breastfeeding (mean = 3.8), felt a medium level of subjective norm or pressure to breastfeed (mean = 27.5), perceived they had moderate control over breastfeeding (mean = 5.5), and experienced an average of about 5 months of breastfeeding.

How do intention, attitude, subjective norm, and perceived behavioral control influence the duration of breastfeeding within a military environment?

Findings related to this question were examined by a correlation analysis to explore the relationships between intention, attitudes, subjective norm, perceived behavioral control, and duration of breastfeeding. Control and attitude are linearly related to duration ($p = 0.0001$) at the 0.05 level of significance. Subjective norm and intention are not significantly related to duration ($p > 0.20$). The strength of the significant relationship between control and duration is strong ($r = 0.70$). The strength of the significant relationship between attitude and duration is moderate ($r = 0.52$). Subjective norm and intention have insignificant weak relationships with duration, with $r = 0.19$ and $r = 0.05$, respectively. Table 5 depicts the correlation analysis.

Table 5

Relationship between Intention, Attitude, Subjective Norm, Perceived Behavioral Control, and Duration of Breastfeeding

Pairs of Variables	N	Pearson Correlation Coefficient (r)	P-Value
Attitude vs. Duration	53	0.52	0.0001
Subjective Norm vs. Duration	47	0.19	0.21
Control vs. Duration	53	0.70	0.0001
Intention vs. Duration	53	0.05	0.72

A multiple regression analysis was conducted using duration as the dependant variable. Attitude, subjective norm, perceived behavioral control, and intention were the independent variables. Using Analysis of Variance (ANOVA), the F-test indicated that the overall model is significant at the 0.05 level ($F = 12.31$, $df = 4$, $p = 0.0001$). Further exploration of the independent variables indicated that control ($p = 0.0001$) was the only variable significantly related to duration.

Are there any differences between the short-term and long-term breastfeeding groups regarding intention, attitude, subjective norm, and perceived behavioral control?

Findings related to this question pertain to differences between the two groups of participants: those who weaned by four months and those still breastfeeding at six

months. T-tests were conducted to compare intention to breastfeed, attitude toward breastfeeding, perceived pressure to breastfeed (subjective norm), and perceived control over breastfeeding between the two groups of short and long-term breastfeeders (duration). Descriptive statistics were calculated for the five variables between the two groups. The descriptive statistics and t-test results are summarized in Table 6.

Table 6

Comparison of Short-Term (four months or less) and Long-Term (at least six months) Breastfeeders

Variables	Group	N	Means	Standard Deviation	2-tailed t-test
Duration	Short-term	18	1.8	0.9	
	Long-term	35	6.5	0.5	
Attitude	Short-term	18	3.5	0.4	T= -4.22 df = 51 P> T = 0.0001
	Long-term	35	4.0	0.5	
Subjective Norm	Short-term	17	25.5	8.1	T= -1.20 df = 45 P> T = 0.25
	Long-term	30	28.7	9.4	
Perceived Behavioral Control	Short-term	18	3.9	1.6	T = -7.18 df = 51 P> T = 0.0001
	Long-term	35	6.3	0.8	
Intention	Short-term	18	6.6	1.0	T = -0.57 df = 51 P> T = 0.57
	Long-term	35	6.8	1.0	

The results indicate that there are significant differences between the two groups regarding attitudes towards breastfeeding and perceived behavioral control ($p = 0.0001$). In general, the long-term group (mean 4.0) had a slightly higher positive attitude than the short-term group (mean 3.5). The long-term group (mean 6.3) perceived a better control of breastfeeding than the short-term group (mean 3.9). As for subjective norm and intention, the two groups were not significantly different ($p > 0.25$).

Summary

This chapter includes a presentation of the analysis of the data that examined intention to breastfeed, attitude toward breastfeeding, subjective norm, perceived behavioral control, and duration of breastfeeding among a sample of 53 women associated with the military who initiated breastfeeding and breastfed between two weeks to four months or for a minimum of six months. The data were organized and presented by a description of the sample, followed by descriptive statistics for the study variables, and finally according to the two research questions. Descriptive statistics were used to discuss the demographic data and the selected variables. Correlation analysis and coefficients were used to explore relationships between the variables. Multiple regression analysis was used to explore the simultaneous joint relationships of intention, attitude, subjective norm, and perceived control to the effect of breastfeeding duration. Finally, t-tests were conducted to compare the five variables between the two groups of women.

In general, the 53 participants in this study had a positive attitude toward breastfeeding, felt a medium level of pressure (subjective norm) to breastfeed, had a moderate perception of control of breastfeeding, and had a strong intention to breastfeed

prior to the birth of the baby. A positive attitude toward breastfeeding and a higher perception of control of breastfeeding exhibited the greatest relationship with longer duration of breastfeeding. Comparison of the two groups of participants found those who breastfed a minimum of six months had a slightly higher positive attitude and perceived a better control of breastfeeding than those who weaned on or before four months. There were no differences found between the two groups on subjective norm and intention.

V. SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

A summary of this research study which examined intention to breastfeed, attitude toward breastfeeding, subjective norm, perceived behavioral control, and duration of breastfeeding among women associated with the military who initiated breastfeeding will be presented in this chapter. Included will be a discussion of the findings in relationship to the purpose of the study, the literature, limitations, and the conceptual framework. In addition to the research findings, related conclusions, implications, and recommendations are presented.

Summary

This comparative descriptive research study addressed the problem regarding factors influencing breastfeeding initiation and duration rates within a military environment. Justification for the study was based on literature documenting the benefits of breastfeeding to mother, baby, and society as well as the American Academy of Pediatrics position statement on breastfeeding that recommends breastfeeding for 12 months. The purpose of this study was to examine attitudes towards breastfeeding, subjective norm, perceived behavioral control, and intention to breastfeed of mothers in a military environment comparing women who have breastfed a minimum of six months with those who weaned by four months. It was proposed that findings of this study would promote development of support programs for breastfeeding families in the military.

The predominant theme of interest within this study was duration of breastfeeding. The variables of interest that were measured and described in this study were intention, attitude, subjective norm, and perceived behavioral control. In addition, demographic characteristics were described. The concept reviewed in the literature was duration of breastfeeding.

Ajzen's (1988) theory of planned behavior provided the framework for the purpose and design of this study. A model was developed by the investigator to illustrate the variables that were investigated.

A Demographic Questionnaire, Attitudes Toward Breastfeeding Scale, Subjective Norm and Perceived Behavioral Control questionnaire, and a question to measure intention were the instruments used to collect data for this study. The convenience sample was obtained from The Breastfeeding Center records at a large military hospital in the Midwest. Forty mothers who were still breastfeeding at six months were contacted by phone and invited to participate in the study. All 40 agreed to fill out a questionnaire. Forty questionnaires were sent and 35 were returned for an 88% return rate. Twenty-two mothers who had stopped breastfeeding by four months were contacted by phone and invited to participate in the study. Twenty of the mothers agreed to fill out a questionnaire. Twenty questionnaires were sent and 18 were returned for a 90% return rate. Descriptive statistics, correlation coefficient and multiple regression analysis, and t-tests were used to analyze the data collected.

Conclusion and Discussion of Findings

The findings of this research study support several conclusions. These findings and conclusions are presented according to the description of the sample, a summary of data related to the four variables, and then as they pertain to the two research questions.

Description of Sample

The demographics of the mothers for both groups were similar in four categories. The mean age of mothers in the long-term breastfeeding group (mean 30.1) was close to that of the short-term breastfeeding group (mean 27.7). The mothers were similar in education level with the majority ranging from some college to a masters degree (long-term breastfeeders, 77.1%, n=27; short-term breastfeeders, 77.8%, n=14). Caucasian was the most represented ethnic background (long-term breastfeeders, 80%, n=28; short-term breastfeeders, 94.4%, n=17). All participants were married except one from the long-term breastfeeding group. These findings are consistent with the literature, which have associated greater age, higher education level, higher income level, Caucasian ethnicity, and marriage with initiation of breastfeeding (Coriel & Murphy, 1988; Hawkins et al., 1987; Lawson & Tulloch, 1995; Matich & Sims, 1992; Quarles et al., 1994). The income level of this sample was more diverse than previously discussed demographics, but the majority (long-term breastfeeders, 76.5, n=26; short-term breastfeeders, 88.2, n=15) were middle-class (\$30,000 or >) which, as indicated above, is a common characteristic of mothers who choose to breastfeed. As for the effect of these characteristics on actual duration of breastfeeding, studies are inconclusive.

The number of hours at work/school varied between the two groups with 50% (n=17) of the long-term breastfeeders reporting not working outside the home and only

33.3% (n=6) of the short-term breastfeeders reporting the same. Conversely, 55.6% (n=10) of the women in the short-term breastfeeding group reported working greater than 40 hours a week and only 23.5% (n=8) of the long-term breastfeeders reported in this category. Again, these findings are in agreement with the literature which identifies full-time employment as a characteristic associated with low breastfeeding incidence (Goodine & Fried, 1984; O'Campo et al., 1992).

Further demographic findings are related to the military status. Although both groups had five mothers who were active duty, that was representative of 27.8% of the short-term breastfeeders and only 14.3% of the long-term breastfeeders.

In conclusion, the sample is consistent with literature in terms of characteristics of mothers who initiate breastfeeding. The areas where the groups differed the most were in number of hours spent at work/school and anticipated length of breastfeeding. O'Campo et al. (1992) reported the plan to return to work/school was significantly associated with anticipated length of breastfeeding. An analysis of the work/school hours with anticipated length of breastfeeding for this sample was not calculated and is a noted limitation of this study as well as a recommendation for future study. Half of the short-term breastfeeding mothers who work more than 40 hours a week (n=10, 55.6%) are active duty military (n=5, 27.8%). Based on this statistic one might want to explore policies supporting breastfeeding in the military work place. Further study is needed in this area to determine the relationship between active duty status and breastfeeding duration.

Intention to Breastfeed, Attitude Toward Breastfeeding, Subjective Norm, Perceived
Behavioral Control

Breastfeeding Center records used for this study covered a seven-month time frame. During the seven months there were a total of 368 births with 294 (80%) initiating breastfeeding. The descriptive statistics showed that the mothers in the sample (n=53) had a strong intention to breastfeed prior to the birth of their baby. The mothers had a positive attitude toward breastfeeding and perceived a moderate sense of control over breastfeeding. A medium level of perceived pressure to breastfeed was found in this sample. Several conclusions from these findings are presented.

Influencing a mother's intention to breastfeed may result in increased initiation rates. Fetherston (1995) came to the same conclusion. Multiple factors play into a mother's intention to breastfeed making planning and implementing a program designed to influence intention difficult to accomplish.

Similar to intention to breastfeed, a positive attitude and a sense of control over breastfeeding may result in increased initiation rates. Wambach (1997) made the same conclusion and pointed out that attitudes and sense of control contribute to the formation of intentions to breastfeed. She recommended bolstering interventions focused on increasing attitudes and feelings of confidence (control) in pregnant women. Clinicians can assess attitudes and perceived control, reinforce positive findings, and offer information to alter negative attitudes and perceptions.

Women in this sample expressed a medium level of perceived pressure to breastfeed. A conclusion can be drawn that this is perhaps a result of being at a distance from family and friends due to military assignment. Also, frequent moves with the military and the typical lack of continuity with a health care provider may prevent the

development of close relationships between mother and provider which would decrease the perception of pressure to breastfeed. The small sample size of this study is a limitation and further exploration is needed to make more substantial conclusions.

How do intention, attitude, subjective norm, and perceived behavioral control influence the duration of breastfeeding within a military environment?

Results of the analysis indicate that control and attitude are significantly related to duration. As scores for perceived behavioral control and attitude towards breastfeeding increased, the duration of breastfeeding increased. Surprisingly, intention was not significantly related to duration. Ajzen's (1988) theory of planned behavior assumes behavior, in this case breastfeeding, is located on a continuum and is influenced through intention by attitude and perception of control. Wambach's (1997) findings were supportive of the theory of planned behavior in that attitude and perceived behavioral control were found to have the greatest influence on intention and intention had the greatest affect on duration. In Ajzen's theory and Wambach's study, intention was significantly related to duration, although those findings were not supported by the data in this study.

The data from this study indicate that individuals with more positive attitudes toward breastfeeding are more likely to breastfeed longer. Also, the greater the amount of control that the individual perceives they have over breastfeeding, the longer they are likely to breastfeed. This finding does support Ajzen's (1988) theory. A limitation to this study is that there was a small sample size that limited the amount of information available for analysis and the ability to generalize findings.

Are there differences between the short-term and long-term breastfeeding groups regarding intention, attitude, subjective norm, and perceived behavioral control?

Results of the comparison of the two groups using a t-test found that although the sample group as a whole expressed a positive attitude toward breastfeeding (mean 3.8, range 1-5) and a moderate degree of perceived behavioral control (mean 5.5, range 1-7), the results were significantly different when analyzed according to each of the two groups. Women who breastfed at least six months exhibited higher attitude (mean 4.0) and higher perception of control (mean 6.3) scores than those who weaned by four months (mean 3.5; mean 3.9, respectively). The conclusion that the long-term breastfeeders had higher scores on attitude and perceived behavioral control than short-term breastfeeders indicates that even though all women in the study had initiated breastfeeding, there were variations in their attitude toward breastfeeding. The fact that as a whole the groups had a positive attitude toward breastfeeding and a moderate degree of perceived behavioral control, and those who continued to breastfeed for a longer period had even higher scores on both scales, supports Ajzen's (1988) theory. Other literature that supports the same findings in regards to perceived behavioral control includes Fetherston (1995), Matich and Sims (1992), O'Campo et al. (1992), and Wambach (1997).

A second finding regarding this question relates to the scores for intention. There was no significant difference between the two groups when the intention variable was examined. Both groups scored high on intention to breastfeed. This finding is consistent with studies by Fetherston (1995), O'Campo et al. (1992), and Wambach (1997) where intention to breastfeed was significantly related to initiation. This finding also supports

the theory used in this study, which states that intention to perform an act is the most powerful predictor of subsequent behavior (Ajzen, 1988). In conclusion, women who intend to breastfeed prior to the birth of the baby are likely to initiate breastfeeding.

Limitations

There are several limitations inherent in this study that must be acknowledged and discussed. The first and foremost factor that limits the ability to generalize the findings of this study has to do with the sample. As indicated at the start of the study, the researcher was aware of the limitations of using a convenience sample for collecting data. In this case, limiting subjects to women who gave birth and chose to breastfeed during a recent seven month time frame may have excluded women whose experience may have differed from those who participated. Military staff, birthing policies, community resources and military deployment practices during this time frame may not be representative of other time frames, thereby limiting the researcher's ability to generalize findings to other women at other sites and in other time periods. The selection of a single setting obviously does not take into consideration the possibility of influencing factors that may be present at other military sites such as higher levels of deployment and lack of breastfeeding support such as the Breastfeeding Center that is at the site of this study.

The small sample size presents another limitation. The desired sample size of 30 participants from each group was not obtained for the short-term breastfeeding group. Therefore one must be aware that the results might be due to an inadequate sample size. This further limits generalizability.

The method of data collection must also be considered under limitations. Questionnaires rely on subjectivity and honesty of the mother's response. Some

questions required the mother to recall specific events or feelings which may be subject to perceptual biasing and is an additional limitation.

Another limitation in relation to the method of data collection is the range of duration of breastfeeding among the short-term breastfeeders. The shortest duration was two weeks ($n=2$) and the longest duration was four months ($n=1$). This wide time span may not allow for accurate examination of the variables. Breastfeeding for two weeks may be a very different experience than breastfeeding for six, twelve, or sixteen weeks. The division of the sample groups does not allow examination of this phenomenon.

There are other noted limitations based on the type of questions asked. Information was not gathered on the type of support, if any, the mothers used or how often, if at all, they used the Breastfeeding Center for support or advice. The actual amount of breastfeeding was not quantified. The mothers were considered to be breastfeeding as long as the infant was getting at least one breast milk feeding in a 24-hour period. Knowing the number and lengths of feedings may present different implications for the study. Plans to return to work/school were not examined in relation to anticipated length of breastfeeding. Also, the reason for weaning the infant was not asked. Literature supports several factors that result in weaning. These factors include use of supplements (Coreil & Murphy, 1988; Goodine & Fried, 1984; Hawkins et al., 1987), age at introduction of solid foods (Goodine & Fried, 1984; Hawkins et al., 1987), birth experience, obstetrical history, timing of first feed (Coreil & Murphy, 1988; Lawson & Tulloch, 1995), and feeding experience (Coreil & Murphy, 1988; Fetherston, 1995; Hawkins, 1987; Wambach, 1997). Lack of information in these areas limits the conclusions and implications of this study.

Finally the internal consistency (theta) for the "subjective norm" questionnaire is below the recommended standard. The recommended standard is .80 for a well-developed measurement tool and .70 for a newly developed instrument (Burns & Grove, 1997).

Implications

The conceptual framework for this study was Ajzen's (1988) theory of planned behavior. Ajzen states that behavior is located along a continuum from complete willful control of behaviors to no willful control. The model depicts three variables as influencing an intention and thus a behavior. Attitude toward a behavior, one's perception of social pressure to perform or not perform a behavior (subjective norm), and one's perception of ease or difficulty of performing a particular behavior (perceived behavioral control) are the variables directly affecting intention which affects the behavior. The findings of this comparative descriptive research revealed important information for individuals involved with breastfeeding education. Following is a presentation of the implications for nurses involved with breastfeeding education.

Interventions aimed at influencing attitudes towards breastfeeding are necessary. Educational programs describing benefits of breastfeeding should be implemented in school health programs as early as kindergarten. If breastfeeding is taught as being the norm for infant feeding and if presented early in life, attitudes are more likely to be formed in favor of breastfeeding.

Confidence building strategies that nurses can incorporate into prenatal care include helping women identify personal solutions to common breastfeeding problems and providing them with resources that can help them should a problem arise. A support

group or list of contact persons may be beneficial in the military environment since most mothers do not have their own extended family in the area.

Supportive educational offerings are necessary as an initial or ongoing source of information for new mothers. Educational offerings for hospital and outpatient staff would benefit in keeping staff trained and knowledgeable on breastfeeding issues.

Anticipatory guidance before childbirth and continued during early lactation are essential in influencing attitude, perceived control, and intention. Many behavioral beliefs about breastfeeding, such as its convenience, health benefits, and associated feelings of embarrassment, would be appropriate areas for persuasive messages.

A final implication for nurses involved with breastfeeding education, particularly in the military, is to examine the military policies and support programs for breastfeeding mothers. In most military duty sections, women are a minority which presents different issues such as having a private place to breastfeed (if the baby is allowed in the duty section) or using a breastpump. Storage of expressed breastmilk is another consideration. Active duty mothers who breastfeed are also faced with such issues as deployment and temporary duty assignments (away from their home base).

Recommendations

Recommendations for further study include:

1. This study should be replicated using a larger sample size so more complete information about the relationships among variables might be established.
2. This study should be replicated using other military environments to see if differences exist.

3. A longitudinal study would be beneficial to examine these variables with actual duration of breastfeeding rather than a predetermined cut off as with the maximum 6-month duration of this study.
4. The demographic variables of age, education, income, marital status, ethnic background, hours of work/school, and military status should be considered in future data analysis in order to determine if relationships exist among them and other variables.
5. A study examining specific types of support for breastfeeding military families would be beneficial to determine if a need exist.
6. A study examining duration of breastfeeding among active duty women only would be beneficial to help determine if there are breastfeeding policy/support systems in place to help this particular population meet goals established by the Surgeon General.
7. A study comparing breastfeeding initiation and duration rates at the study site (where there is a breastfeeding center) with that of another military site (where a breastfeeding center does not exist) would be beneficial in gathering data to possibly support opening of other such centers.
8. A longitudinal study which explores the relation between a woman's intention to breastfeed, anticipated length of breastfeeding, and actual duration would be beneficial to examine predictors of breastfeeding duration.
9. A qualitative study examining the mother's perception of the military environment's influence on her breastfeeding experience would be useful in order to describe different experiences at an in depth level.

10. A study comparing civilians and military women who breastfeed would be beneficial in determining if there are different factors within the two populations that influence breastfeeding.
11. A study comparing mothers who chose to bottle-feed and those who chose to breastfeed could lend information to a lot of different areas. A better understanding of what determines infant feeding decisions is an important basis for public health policy. Identifying the populations who chose not to breastfeed could also help in the development of educational offerings designed to encourage these high risk populations to breastfeed.

In conclusion, the findings, conclusions, implications, and recommendations for the military population appear on the surface to be the same as for the civilian population. However, a number of questions related to breastfeeding in the military environment remain unanswered. Nurses involved with breastfeeding education are challenged to design programs educating individuals on the benefits of breastfeeding. These programs should start during early ages and not just after pregnancy is identified. Increased knowledge about breastfeeding benefits may influence attitude in a positive manner. The more informed individuals become on the advantages of breastfeeding and see it as the norm, perhaps perceived behavioral control in mothers who breastfeed will also increase and thus duration as well. Advocates of breastfeeding, whether health care professional or the lay person, are challenged to play a role in promoting breastfeeding as the norm for infant feeding. As the American Academy of Pediatrics stated (1997) "the breastfed infant is the reference or normative model against which all alternative feeding methods must be measured" (Breastfeeding and the Use", 1997, p. 1035). Promotion of breastfeeding can come in many routes such as supporting breastfeeding families with

words of encouragement and education, and encouraging legislators and policy makers to support breastfeeding in public and in the work place. Conducting breastfeeding research provides information regarding best approaches to educating and supporting the breastfeeding family.

APPENDIX A

PERMISSION TO USE "THEORY OF PLANNED BEHAVIOR"

<HTML><PRE>Subj: RE: Permission to use Theory of Planned Behavior
Date: 98-10-13 08:52:10 EDT
From: bmartin@openup.co.uk (Barbara Martin)
To: DDoyl@aol.com ('DDoyl@aol.com')

Dear Tammy Reed Doyle

I refer to your e-mail requesting permission to use Figure 6.2 'Theory of Planned Behavior' from Attitudes, Personality and Behavior by Icek Ajzen, Open University Press 1988.

I am happy to give permission for you to include this material in your thesis on breastfeeding providing full acknowledgement is given.

Yours sincerely
Barbara Martin

> -----
> From: DDoyl@aol.com[SMTP:DDoyl@aol.com]
> Sent: 06 October 1998 23:58
> To: Barbara Martin
> Subject: Permission to use Theory of Planned Behavior
>

----- Headers -----

Return-Path: <bmartin@openup.co.uk>
Received: from rly-zc03.mx.aol.com (rly-zc03.mail.aol.com [172.31.33.3]) by air-zc02.mail.aol.com (v50.18) with SMTP; Tue, 13 Oct 1998 08:52:10 -0400
Received: from oupnts2.openup.co.uk (mailgate.openup.co.uk [195.11.220.130]) by rly-zc03.mx.aol.com (8.8.8/8.8.5/AOL-4.0.0) with ESMTP id IAA01936 for <DDoyl@aol.com>; Tue, 13 Oct 1998 08:52:08 -0400 (EDT)
Received: by mailgate.openup.co.uk with Internet Mail Service (5.5.1960.3) id <4QA7GTCD>; Tue, 13 Oct 1998 13:52:29 +0100
Message-ID: <912427EC9FFED111A7C80060084C98CC073319@mailgate.openup.co.uk>
From: Barbara Martin <bmartin@openup.co.uk>

APPENDIX B

AGENCY ACCESS FORM

Wright State University-Miami Valley
College of Nursing and Health
AGENCY PERMISSION FOR CONDUCTING STUDY

THE 74th Medical Group, Wright Patterson Air Force Base

GRANTS TO Tammy Reed Doyle

a student enrolled in a program of nursing leading to a Master's degree at Wright State University, the privilege of using its facilities in order to study the following problem:
Factors Influencing Breastfeeding in a Military Environment.

The conditions mutually agreed upon are as follows:

1. The agency (may) (~~may not~~) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (~~may not~~) be identified in the final report.
3. The agency (~~wants~~) (does not want) a conference with the student when the report is completed.
4. Other: _____

Date: 27 Jan 99

Patti Hoffman
Signature of Agency Personnel
PATTI HOFFMAN, Maj, USAF, NC
Chair, Nursing Research Function

Tammy Reed Doyle
Signature of Student

Susan Praeger
Susan Praeger, Ed.D.

APPENDIX C

INSTITUTIONAL REVIEW BOARD

WRIGHT STATE UNIVERSITY

RESEARCH INVOLVING HUMAN SUBJECTS

SC# 2064

Original Review X

Continuing Review

ACTION OF THE WRIGHT STATE
UNIVERSITY

SCREENING COMMITTEE

Assurance Number: M-1021; ID No. 01NR

Title: *Factors Influencing Breastfeeding Duration In A Military Environment*

Contract No.

Principal Investigator: Tammy Reed Doyle, P.I., Student

Susan Praeger, Ed.D, Fac. Adv.

Department: College of Nursing


The Institutional Review Board named above has taken the following action with regard to the use of human subjects on this proposed project:

 X Approved

 Approved pending receipt of the items listed **

The conditions, if any, are attached and are signed by the Committee Chairer or IRB Coordinator.

REMINDER: FDA regulations require prompt reporting to the IRB of any changes in research activity, changes in approved research during the approval period may not be initiated without IRB review (submission of an amendment), and prompt reporting of any unanticipated problems (adverse events).


Signed _____ Coordinator, WSU-IRB

Date: December 4, 1998

This approval is effective only through: December 4, 1999

This activity may be initiated only after any restrictions that may have been placed on this study by the Board have been addressed and removed. To continue the activities approved under this protocol you should receive the appropriate form(s) from Research and Sponsored Programs (RSP) two to three months prior to the required due date. If you do not receive this notification, please contact RSP at 775-2425.

APPENDIX D

INSTITUTIONAL REVIEW BOARD FOR SELECTED SITE



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

27 January 1999

MEMORANDUM FOR CAPT TAMMY DOYLE
5021 GANDER RD W
DAYTON OH 45424

FROM: 74th MDOS/SGOA
Clinical Investigations
4881 Sugar Maple Drive
Wright-Patterson AFB OH 45433-5300

SUBJECT: Proposed Protocol

1. The protocol you submitted, "Factors Influencing Breastfeeding Duration in a Military Environment," was reviewed via expedited review and approved by the Chair of the Institutional Review Board (IRB) of Wright-Patterson Medical Center on 11 January 1999. The Commander of Wright-Patterson Medical Center has also reviewed the protocol. It was determined to be exempt and has been assigned file number FWP19990008E. You may now begin your study.
2. Progress reports will be due annually. You will receive a reminder 30 days in advance when your report is due. If you complete your study prior to January 2000 a final report may be completed.
3. Any changes to the study must be submitted to the Clinical Investigations office for approval prior to initiation.
4. Any unanticipated major adverse reactions or other medical misadventures must be reported immediately to the department chairperson, the Chief of Medical Staff, the Clinical Investigations Coordinator and ultimately the commander IAW AFI 40-403. Such events will also need to be summarized in the subsequent progress report.
5. If you anticipate separating from the Air Force or changing assignments before the protocol is completed, you must notify the Clinical Investigations Office as soon as this is known. You will be required to either formally close the protocol, or to have another investigator take over the study. The latter process requires nomination by the flight commander, submission of a curriculum vitae, and approval by the Institutional Review Board.
6. Please indorse below and return to Clinical Investigations. I hope that your study will prove to be a worthwhile experience for you. Let us know if there is any way we can assist you.

DEBBIE BACHMAN
Clinical Investigations Coordinator

1st IND

TO: SGOA/Clinical Investigations

Noted/Acknowledged

Principle Investigator

Date

APPENDIX E

DEMOGRAPHIC SURVEY

DEMOGRAPHIC DATA COLLECTION QUESTIONNAIRE

For Breastfeeding Mothers

Please answer the following questions to the best of your ability. Thank-you.

1. What was your goal for how long you would breastfeed your baby? _____
2. How long have you been breastfeeding? (Please give answer in number of months and days) _____
3. Is your baby getting anything other than breastmilk? ☐ yes ☐ no
If you answered "yes" above, is your baby getting breastmilk for at least one feeding in a 24-hour period? ☐ yes ☐ no
4. What was your age at time of delivery? _____

For the following questions, please check the space that most closely describes you.

5. What is your highest level of education completed?
☐ less than high school diploma ☐ high school diploma or GED
☐ 1-4 years of college (no degree) ☐ associate degree
☐ bachelors degree ☐ masters degree
☐ PhD
6. What is your yearly household income?
☐ less than \$20,000 ☐ \$20,000 – 30,000
☐ \$30,000 – 40,000 ☐ \$40,000 – 50,000
☐ more than \$50,000
7. What is your primary ethnic background?
☐ African American ☐ Hispanic or Latin American
☐ Caucasian ☐ Asian
☐ American Indian ☐ Other _____
8. What was your marital status at time of delivery?
☐ unmarried ☐ separated ☐ divorced
☐ married ☐ engaged or living with significant other
9. Do you work or attend school outside of the home?
☐ high school ☐ college part-time
☐ college full-time ☐ work less than 20 hours/week
☐ work 20-40 hours/week ☐ work 40+ hours/week
10. Are you:
☐ Active Duty Military ☐ Dependent of Active Duty Military
☐ Dependent of Retired Military ☐ Retired Military

Thank you again for your time!

DEMOGRAPHIC DATA COLLECTION QUESTIONNAIRE

For Mothers Who Have Weaned Infant

Please answer the following questions to the best of your ability. Thank-you.

1. What was your goal for how long you would breastfeed your baby? _____
2. How long did you breastfeed? (Please give answer in number of months and days)

3. What was your age at time of delivery? _____

For the following questions, please check the space that most closely describes you.

4. What is your highest level of education completed?

<input type="checkbox"/> less than high school diploma	<input type="checkbox"/> high school diploma or GED
<input type="checkbox"/> 1-4 years of college (no degree)	<input type="checkbox"/> associate degree
<input type="checkbox"/> bachelors degree	<input type="checkbox"/> masters degree
<input type="checkbox"/> PhD	

5. What is your yearly household income?

<input type="checkbox"/> less than \$20,000	<input type="checkbox"/> \$20,000 – 30,000
<input type="checkbox"/> \$30,000 – 40,000	<input type="checkbox"/> \$40,000 – 50,000
<input type="checkbox"/> more than \$50,000	

6. What is your primary ethnic background?

<input type="checkbox"/> African American	<input type="checkbox"/> Hispanic or Latin American
<input type="checkbox"/> Caucasian	<input type="checkbox"/> Asian
<input type="checkbox"/> American Indian	<input type="checkbox"/> Other _____

7. What was your marital status at time of delivery?

<input type="checkbox"/> unmarried	<input type="checkbox"/> separated	<input type="checkbox"/> divorced
<input type="checkbox"/> married	<input type="checkbox"/> engaged or living with significant other	

8. Do you work or attend school outside of the home?

<input type="checkbox"/> high school	<input type="checkbox"/> college part-time
<input type="checkbox"/> college full-time	<input type="checkbox"/> work less than 20 hours/week
<input type="checkbox"/> work 20-40 hours/week	<input type="checkbox"/> work 40+ hours/week

9. Are you:

<input type="checkbox"/> Active Duty Military	<input type="checkbox"/> Dependent of Active Duty Military
<input type="checkbox"/> Dependent of Retired Military	<input type="checkbox"/> Retired Military

Thank you again for your time!

APPENDIX F

ATTITUDE TOWARD BREASTFEEDING SCALE

ATTITUDES TOWARD BREASTFEEDING SCALE

Scoring instructions: The instrument is scored by summing the weights assigned to the response options selected by the individual and then dividing by 18 (the number of responses), so the individual's composite score may range from 1 through 5. A score of 3.5 or higher indicates a positive attitude towards breastfeeding. This score is based on the pilot study of the instrument and subsequent studies.

The following items describe attitudes or opinions women may have about breastfeeding.

Please read the statements and then circle the response that best describes your belief about the statement. There are five possible responses to choose from.

SD=Strongly Disagree

D=Disagree

N=No definite opinion or neutral

A=Agree

SA=Strongly Agree

- | | | | | | |
|---|----|---|---|---|----|
| 1. Breastfeeding ties you down. | SD | D | N | A | SA |
| 2. Breastfeeding will improve the appearance of the mother's body. | SD | D | N | A | SA |
| 3. Breastfeeding is more attractive to the baby's father than bottle feeding. | SD | D | N | A | SA |
| 4. The baby will enjoy the breast more than bottle. | SD | D | N | A | SA |
| 5. Breastfeeding is healthier for the baby. | SD | D | N | A | SA |
| 6. Bottle feeding is more sanitary than breastfeeding. | SD | D | N | A | SA |
| 7. Breastfeeding provides a closer link with the baby. | SD | D | N | A | SA |
| 8. Breastfeeding is more convenient. | SD | D | N | A | SA |
| 9. There is less chance of the baby getting infections when breastfed. | SD | D | N | A | SA |
| 10. Breastfeeding makes the breasts less attractive. | SD | D | N | A | SA |

11. Breastfeeding provides the amount of milk the baby needs.	SD	D	N	A	SA
12. Breastfeeding provides more freedom.	SD	D	N	A	SA
13. Breastfeeding is better for recovering the figure.	SD	D	N	A	SA
14. Breastfeeding is likely to be embarrassing at times.	SD	D	N	A	SA
15. Breastfeeding often provides insufficient milk.	SD	D	N	A	SA
16. Breastfeeding may not provide the right kind of milk for the baby.	SD	D	N	A	SA
17. Breastfeeding requires special skills.	SD	D	N	A	SA
18. All things considered, breastfeeding and bottle-feeding are about equal.	SD	D	N	A	SA

Revised and used with permission of Regina Cusson.

APPENDIX G

SUBJECTIVE NORM QUESTIONNAIRE

Subjective Norm Items

Scoring instructions: Multiply score on belief item by score on corresponding motivation to comply item. Sum all multiplied scores for a total and divide by number of items (4). Range 1-49, higher scores indicating higher subjective norm (pressure) to breastfeed.

The following scales deal with how important people in your life feel about your infant feeding choice. **(These are the belief items.)** Please check the numbered space that best describes how you feel about their feelings.

The baby's father thinks I

definitely								definitely
should	7	6	5	4	3	2	1	should
breastfeed								bottlefeed

My mother thinks that I

definitely								definitely
should	7	6	5	4	3	2	1	should
breastfeed								bottlefeed

My closest friend or other important person thinks that I

Definitely								definitely
should	7	6	5	4	3	2	1	should
breastfeed								bottlefeed

My health care provider (obstetrician, midwife, or pediatrician) thinks that I

Definitely								definitely
should	7	6	5	4	3	2	1	should
breastfeed								bottlefeed

The following scales deal with how you feel about important persons' thoughts about your infant feeding choice. (These are the motivation to comply items.) Please check the numbered space that best describes your feelings.

How much do you care what the baby's father thinks you should do about infant feeding

Do not								Care very
care	1	2	3	4	5	6	7	much
at all								

How much do you care what your mother thinks you should do about infant feeding?

Do not								Care very
care	1	2	3	4	5	6	7	much
at all								

How much do you care what your closest friend or other important person thinks you should do about infant feeding?

Do not								Care very
care	1	2	3	4	5	6	7	much
at all								

How much do you care what health care providers think you should do about infant feeding?

Do not								Care very
care	1	2	3	4	5	6	7	much
at all								

APPENDIX H

PERCEIVED BEHAVIORAL CONTROL QUESTIONNAIRE

AND

ONE-ITEM INTENTION MEASUREMENT

Perceived Behavioral Control Items

Scoring: Score by summing respective items. Range 4-28, with higher scores representing higher perceived control.

Words in italics are used in questionnaires sent to mothers who have weaned their infant from breastfeeding.

How confident are (*were*) you of your ability to breastfeed?

Extremely | | | | | | | | feel neither confident
confident 7 6 5 4 3 2 1 or not confident

If I wanted to, I could (*could have/did*) easily breastfeed my infant for the intended time period.

Extremely | | | | | | | | Extremely
likely 7 6 5 4 3 2 1 unlikely

How much control do you have over whether you do (*did*) or do not (*did not*) breastfeed for the intended period of time?

Complete | | | | | | | | Very Little
control 1 2 3 4 5 6 7 control

At this time I feel breastfeeding for the intended time period will be:

At the time I was breastfeeding, I felt breastfeeding for the intended period of time would be:

Easy | | | | | | | | Difficult
1 2 3 4 5 6 7

Intention Measurement

Before your baby was born, what feeding method had you chosen?

Definitely | | | | | | | | Definitely will
will 7 6 5 4 3 2 1 bottle-feed
breastfeed

Revised and used with permission of Dr. Karen Wambach.

APPENDIX I

PERMISSION TO USE INSTRUMENTS



University of Connecticut
School of Nursing

Tammy Reed Doyle
5021 Gander Rd W
Dayton, OH 45424
October 7, 1998

Dear Tammy,

You have my permission to use the scales I developed to assess attitudes towards and knowledge of breastfeeding. Please find enclosed copies of the scales, along with information for scoring and reliability data. I would appreciate it if you would send me a copy of the results, especially any psychometric data on the scales. I wish you success in your research endeavors.

Sincerely,

Regina M. Cusson, RNC, NNP, PhD
Professor

An Equal Opportunity Employer

231 Glenbrook Road, U-26
Storrs, Connecticut 06269-2026

Telephone: (860) 486-3716
Facsimile: (860) 486-0001
web: www.nursing.uconn.edu

Subj: permission
Date: 98-07-15 14:15:56 EDT
From: KWAMBACH@kumc.edu (Karen Wambach)
To: Ddoyl@aol.com

To whom this may concern:

Tammy Doyle has permission to use the Breastfeeding Experience Scale (Wambach, 1990) and scales based on the Theory of Planned Behavior that I developed for my dissertation research (Wambach, 1993; Wambach, 1997) in her masters research. If you have any questions please call me at 913-588-1639.

Sincerely,

Karen Wambach, RN, PhD
Clinical Assistant Professor
University of Kansas School of Nursing
3901 Rainbow Boulevard
Kansas City, Kansas 66160

----- Headers -----
Return-Path: <KWAMBACH@kumc.edu>
Received: from relay14.mx.aol.com (relay14.mail.aol.com [172.31.109.14]) by
air12.mail.aol.com (v45.18) with SMTP; Wed, 15 Jul 1998 14:15:53 -0400
Received: from kumc.edu (gw.kumc.edu [169.147.166.224])
by relay14.mx.aol.com (8.8.8/8.8.5/AOL-4.0.0)
with SMTP id OAA16911 for <Ddoyl@aol.com>;
Wed, 15 Jul 1998 14:15:47 -0400 (EDT)
Received: from KUMCDO-Message_Server by kumc.edu
with Novell_GroupWise; Wed, 15 Jul 1998 13:15:40 -0500
Message-Id: <s5acab7c.010@kumc.edu>
X-Mailer: Novell GroupWise 4.1
Date: Wed, 15 Jul 1998 13:15:14 -0500
From: Karen Wambach <KWAMBACH@kumc.edu>
To: Ddoyl@aol.com
Subject: permission
Mime-Version: 1.0
Content-Type: text/plain
Content-Disposition: inline

APPENDIX J

QUESTIONNAIRE

Right Care Wright People Wright - Patt



Right Choice

The following items describe attitudes or opinions women may have about breastfeeding.

Please read the statements and then circle the response that best describes your belief about the statement. There are five possible responses to choose from.

SD=Strongly Disagree

D=Disagree

N=No definite opinion or neutral

A=Agree

SA=Strongly agree

Breastfeeding ties you down.	SD	D	N	A	SA
Breastfeeding will improve the appearance of mother's body.	SD	D	N	A	SA
Breastfeeding is more attractive to the baby's father than bottle feeding.	SD	D	N	A	SA
The baby will enjoy the breast more than bottle.	SD	D	N	A	SA
Breastfeeding is healthier for the baby.	SD	D	N	A	SA
Bottle feeding is more sanitary than breastfeeding.	SD	D	N	A	SA
Breastfeeding provides a closer link with the baby.	SD	D	N	A	SA
Breastfeeding is more convenient.	SD	D	N	A	SA
There is less chance of the baby getting infections when breastfed.	SD	D	N	A	SA
Breastfeeding makes the breasts less attractive.	SD	D	N	A	SA
Breastfeeding provides the amount of milk the baby needs.	SD	D	N	A	SA
Breastfeeding provides more freedom.	SD	D	N	A	SA
Breastfeeding is better for recovering the figure.	SD	D	N	A	SA
Breastfeeding is likely to be embarrassing at times.	SD	D	N	A	SA
Breastfeeding often provides insufficient milk.	SD	D	N	A	SA
Breastfeeding may not provide the right kind of milk for the baby.	SD	D	N	A	SA
Breastfeeding requires special skill.	SD	D	N	A	SA
All things considered, breastfeeding and bottle feeding are about equal.	SD	D	N	A	SA

The following scales deal with *what important people in your life think* about your infant feeding choice. Place an "x" along the line in the space that best describes how you think they feel.

The baby's father thinks I
Definitely _____ Definitely should
should breastfeed _____ bottle-feed

My mother thinks that I
Definitely _____ Definitely should
should breastfeed _____ bottle-feed

My closest friend or other important person thinks that I
Definitely _____ Definitely should
should breastfeed _____ bottle-feed

My health care provider (obstetrician, midwife, or pediatrician) thinks that I
Definitely _____ Definitely should
should breastfeed _____ bottle-feed

The following scales deal with *how you feel about* what important people in your life think about your infant feeding choice. Place an "x" along the line in the space that best describes how you feel.

How much do you care what the baby's father thinks you should do about infant feeding?
Do not care _____ Care very
at all _____ much

How much do you care what your mother thinks you should do about infant feeding?
Do not care _____ Care very
at all _____ much

How much do you care what your closest friend or other important person thinks you should do about infant feeding?
Do not care _____ Care very
at all _____ much

How much do you care what health care providers think you should do about infant feeding?
Do not care _____ Care very
at all _____ much

Thank you for your recent phone agreement to participate in this research study on breastfeeding. The study is being conducted by myself, Tammy Reed Doyle. I am a nurse in the Air Force and am currently a graduate student at Wright State University. I was part of the Breastfeeding Center's founding team and I am interested in collecting data from the Center for a research project. I am particularly interested in how long a woman who gives birth in a military environment chooses to breastfeed.

You will find enclosed a four (4) page questionnaire. Total time to complete the questionnaire is approximately 30 minutes. **You are not required to put your name on any of the forms.** Once you have completed the forms please place them in the postage paid envelopes and place in the mail. **You do not need to put a return address on the envelope.** If you are interested in receiving a copy of the abstract and final results of the study, include (or mail separately) an index card with your address. The card will be kept separate from your responses so there will be no way to identify you with your responses. If you anticipate a move before August of 1999, provide me with a forwarding address. **Completion and return of the questionnaire will serve as your consent to participate in this research study.**

Any information that is collected in connection with this research and that can be identified with you or your infant will remain confidential to the extent provided by federal, state, and local law. **Your decision whether or not to participate in this study is voluntary. If you decide to participate, you are free to withdraw at any point. Such withdrawal will not adversely affect your or your baby's care at this institution or cause a loss of benefits.** There will be no additional cost to you for your participation in this study.

If you have any questions or concerns about this study please feel free to contact myself or my faculty advisor at the places or numbers below:

Tammy Reed Doyle, Capt, USAF, NC	Susan Praeger, RN, EdD
Principle Investigator	Faculty Advisor
Graduate Student	Wright State University
(937) 257-4038	(937) 775-2594
<u>Ddoyle@aol.com</u>	<u>Spraeger@wright.edu</u>

I express my deepest appreciation for your assistance in helping me complete this study on breastfeeding.

Sincerely

Tammy Reed Doyle

You are now finished with the questionnaire! I again express my deepest appreciation for your time and willingness to participate in this study. Please place the questionnaire in the postage paid envelopes and place in the mail. You do not need to put a return address on the envelope. If you are interested in receiving a copy of the abstract and final results of the study, include (or mail separately) an index card with your address. This card will be kept separate from your responses so there will be no way to identify you with your questionnaires. If you anticipate a move before August of 1999, provide me with a forwarding address. Completion and return of the questionnaire will serve as your consent to participate in this research study. Thank you!

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